ANTHROPOLOGICAL EXAMINATION OF THE ARPADIAN AGE POPULATION OF SZATYMAZ (10TH TO 12TH CENTURIES)

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Introduction

In the autumn of 1957 near the railway station of village Szatymaz the archeologist Ottó Trogmayer and the anthropologist Gyula Farkas undertook a salvage-excavation under the control of the director general of the Szeged Museum, Alajos Bálint. The archeological material of the unearthed cemetery from the Arpadian age was published by Alajos Bálint (1960), therefore, concerning further archeological problems, we refer to his respective paper. Here we repeat some data of the above mentioned paper first of all concerning the anthropological material. It is to be mentioned that, in consequence of the hasty performing of excavations, in the case of some graves, the rescuing of the skeletal remains had to be confined, in spite of all the efforts taken, to the *crania* and long bones, as well as to the observation of the circumstances of findings. The skeletal material of altogether 195 numbered and mapped graves, further that of 60 fully rescued ones, and, at last, that of 31 scattered graves have got into the collection of the Anthropological Institute of the Attila József University (Szeged). Table 1 gives a survey of the collected anthropological material arranged in groups according to the state of conservation, age, and (at grown-up persons) sexes. The material is well conserved. The skeletal remains of adults suitable for examination may be arranged as follows: males — *crania* with postcranial skeletons: 53 cases; *crania* only 39; postcranial skeletons only: 22, females — *crania* with postcranial skeletons: 42 cases; *crania* only: 22; postcranial skeletons only: 25 cases. We also notice, that the sixty-fourth childgrave is from the Sarmatian period; it, however, has not been treated here in details. The skull of the famele grave 175 is not dealt with either, as at present that *cranium* is placed in the archeological exhibition of the Ferenc Móra Museum in Szeged. It is probably caused by the rapid pace of salvage-excavation that grave 162, also marked to be of the Sarmatian period, according to the archeological publication contained a child while in our collection the skeleton from the grave with the same number is beyond doubt that of a grown-up person; this tomb has obtained, therefore, number 162/a in our inventory, for sake of distinction. The third grave marked as Sarmatian (No. 5) is on the basis of its skeletal remains that of a male; it has no archeological furniture; anyway, it has agreed in its metric and morphological characteristics, with the other males of cemetery from Arpadian age.

Unfortunately (for limiting the length of this publication) we had to disregard the publication of some Tables, drawn up and placed in the archives of the Anthropological Institute of the Attila József University. In the Appendix of this paper the following Tables can be found:

(9) individual metric tables of males,

(10) individual metric tables of females,

(11) individual metric tables of subadults and infants.

The material has been elaborated in a way similar to an earlier publication of the two authors of this paper (LIPTÁK—FARKAS, 1962), according to MARTIN's prescription (MARTIN—SALLER, 1957). Data of a few fragmentary crania are omitted from the Appendix, nevertheless, they had been taken into consideration when calculating the parameters.

A general characterization of the population of Szatymaz in the Arpadian age

A general characterization of this series from the Arpadian age is given on the basis of Tables 2, 3, 4 and 5, as follows.

Plate 1. Szatymaz—Railway Station, 10—12th century. Scattered grave 10., ♂ — crA

Plate 2. Szatymaz—Railway Station, 10—12th century. Grave 58., ♂ — pn

The *crania* of **males** are middle-long, narrow but approaching the middle-wide category, on the basis of the cranial index, the mean is near the lower limits of mesocrany; regarding the distribution of cranial indices, dolichocrany and mesocrany are represented in an approximatively equal proportion the other index-groups being subordinated. The cranial vault is medium high, on the basis of the length-height-index orthocranic; regarding the breadth-height-index, metriocrany is prevailing. The forehead ranges from narrow to medium wide; on the basis of the transversal frontoparietal index, the preponderance of eurymetopy is characteristic. The cranial contour viewed from above *(norma verticalis)* is as a rule pentagonoid or ovoid. The *glabella* is mostly of second degree, and much more definitely of third degree (according to BROCA's pat-

tern), and even the fourth degree is represented in some instances. The comparatively large cranial capacity and preponderance of euencephaly is characteristic. — The face is medium wide and medium high, and meso-leptoprosopic, on the basis of the facial index. The situation is similar in view of the upper facial index but those belonging to the mesene index group prevail. The preponderance of orthognathism is characteristic for the facial profile. The alveolar prognathism is missing in the most cases, however, it may be also moderate and even strong, in a decreasing percentage. The shallow or medium deep *fossa canina* is characteristic. The orbits are rather hypsiconch but also the ratio of mesoconch orbits is considerable. The nose is, on the basis of nasal index, mesochamaerrhine;

Plate 3. Szatymaz—Railway Station, 10—12th century. Grave 141., ♂ — n

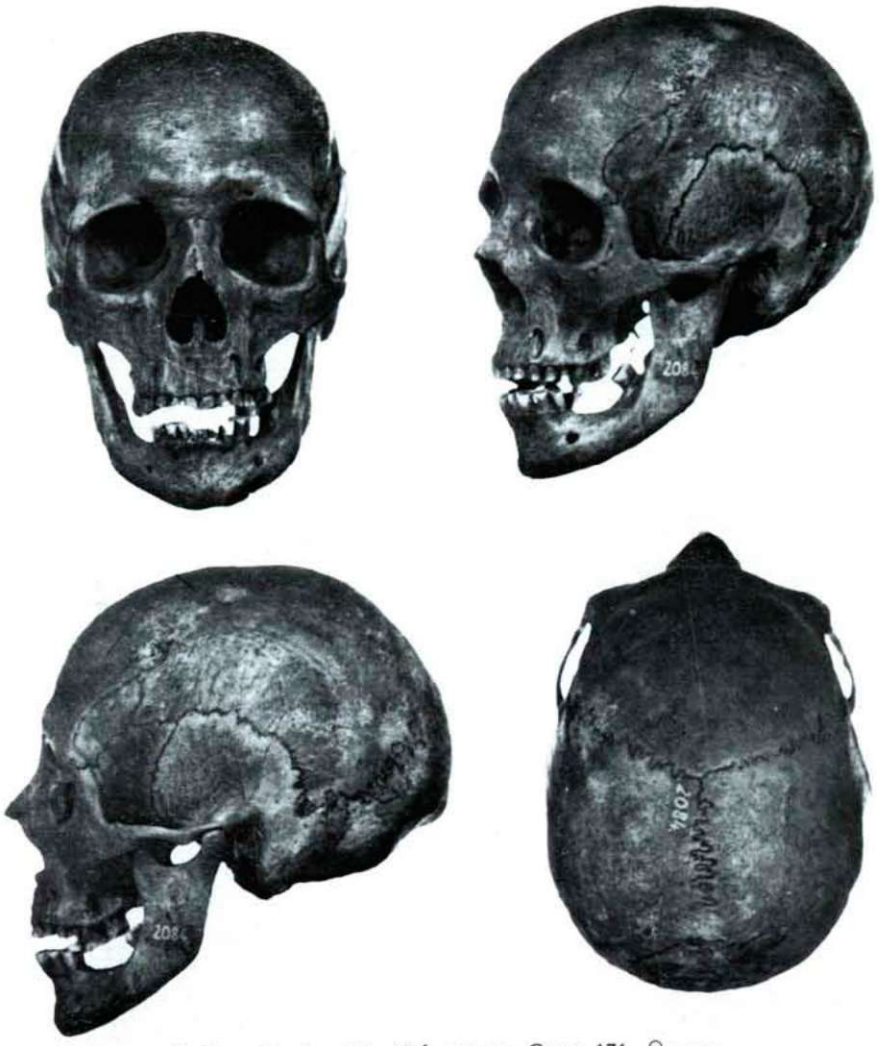

Plate 4. Szatymaz—Railway Station, 10—12th century. Grave 171., ♀ — n

regarding the index groups, the mesorrhine category is the most considerable but also the leptorrhine and chamaerrhine osseous noses are represented in a notable – roughly 30 per cent — ratio. — The stature is, by the arithmetic mean, medium, and regarding MARTIN's stature groups, the medium, tall-medium, short-medium, and tall stature groups are the most frequent (in a decreasing ratio). The ratio of short ones is low.

The *crania* of **females** are — like that of males — medium long, narrow, the mean of cranial index approaches the lower limit of mesocrany; considering the dispersion of cranial indices we have observed that the mesocranic index-group prevails but also the dolichocranics are represented with a high percentage. The

height characteristics of the cranial vault are similar to those of males as well; in consideration of the breadth-height index, here again metriocrany prevails anyhow, besides them also those with acrocranic *crania* are represented in a considerable percentage. The forehead is narrow; eurymetopic. In the vertical norm the contour of the *cranium* conforms to that of the males. The *glabella* shows mostly the second and third degrees according to BROCA's pattern, the former prevailing. The comparatively large cranial capacity is characteristic, in the highest percentage euencephaly and then aristencephaly being observed. — The face is, also here, of medium breadth and moderate height, meso-leptoprosopic, according to the upper facial index, mesene. By the distribution of the

Plate 5. Szatymaz—Railway Station, 10—12th century. Grave 166., ♂ — m

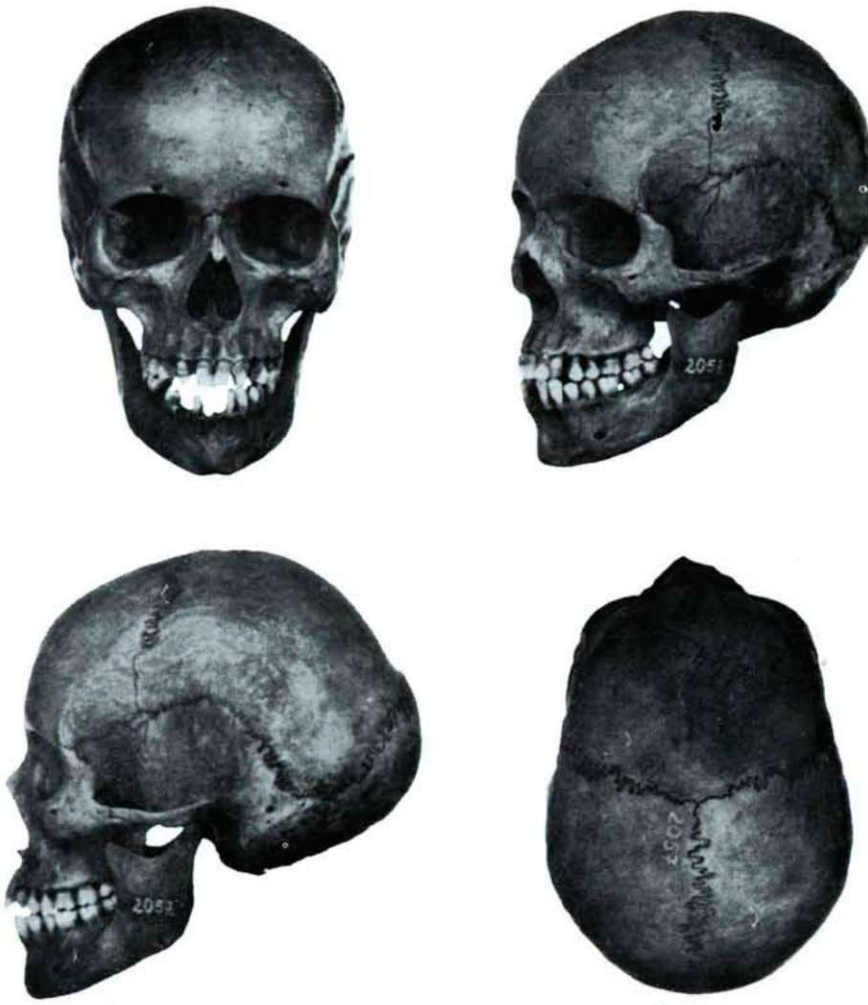

Plate 6. Szatymaz—Railway Station, 10—12th century. Grave 144., ♀ — m

facial indices, there those with leptoprosopic faces prevail, while on the basis of the upper facial index the percentage of those belonging to the mesene and leptene groups is the highest. The facial profile is mainly orthognathous. The alveolar prognathism is moderate in the most cases. The shallow and medium *fossa canina* is characteristic. The orbits are, on the average, hypsiconch, according to the index groups, however, meso- and hypsiconchy are represented in an equal percentage. The nose is meso-chamaerrhine, according to the index groups mainly chamaerrhine, anyhow, the percentage of mesorrhine and leptorrhine noses is considerable, as well. — The stature is from the arithmetic mean, between medium and tall-medium size. According to the distribution the number of short medium- and tall medium-size is considerable.

From the anatomic variations, the presence of *torus palatinus* (Fig. 4, Plate 9) was observed at nine (5, 7 p. c.) of 159 skulls. From the anatomic variations of the cranial vault, most frequently, the suture bones *(ossicula suturarum)* may be observed (Fig. 5, Plate 9) in 53 cases (28, 8 p. c.). These can generally be found in the region of *sutura lambdoidea*. In the 184 cranial vaults in 21 cases (11, 4 p. c.) epipteric bones can be observed on the left, in 17 cases (9, 2 p. c.) on the right (Fig. 7, Plate 9), moreover metopic sutures in six cases (3, 8 p. c.) Plate 3). The other abnormalities are represented but in a low number. E. g., we have found *processus frontalis ossis temporalis* on the right, and on the left, resp. (Fig. 3, Plate 9), as well as bregmatic bones (Fig. 1, Plate 9) only in two cases (1, 1 p. c.); *os apicis, os apicis bipartitum* (Fig. 2, plate 9), *os incae laterale*

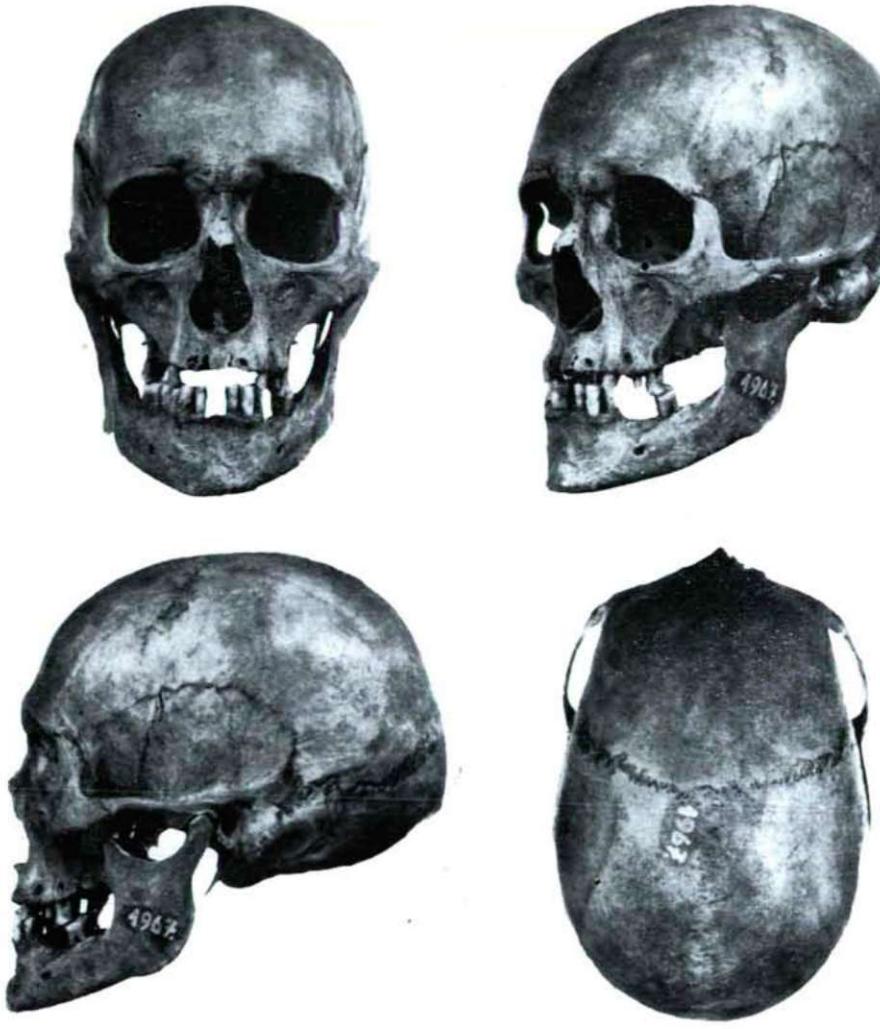

Plate 7. Szatymaz—Railway Station, 10—12th century. Grave 60., ♂ — am

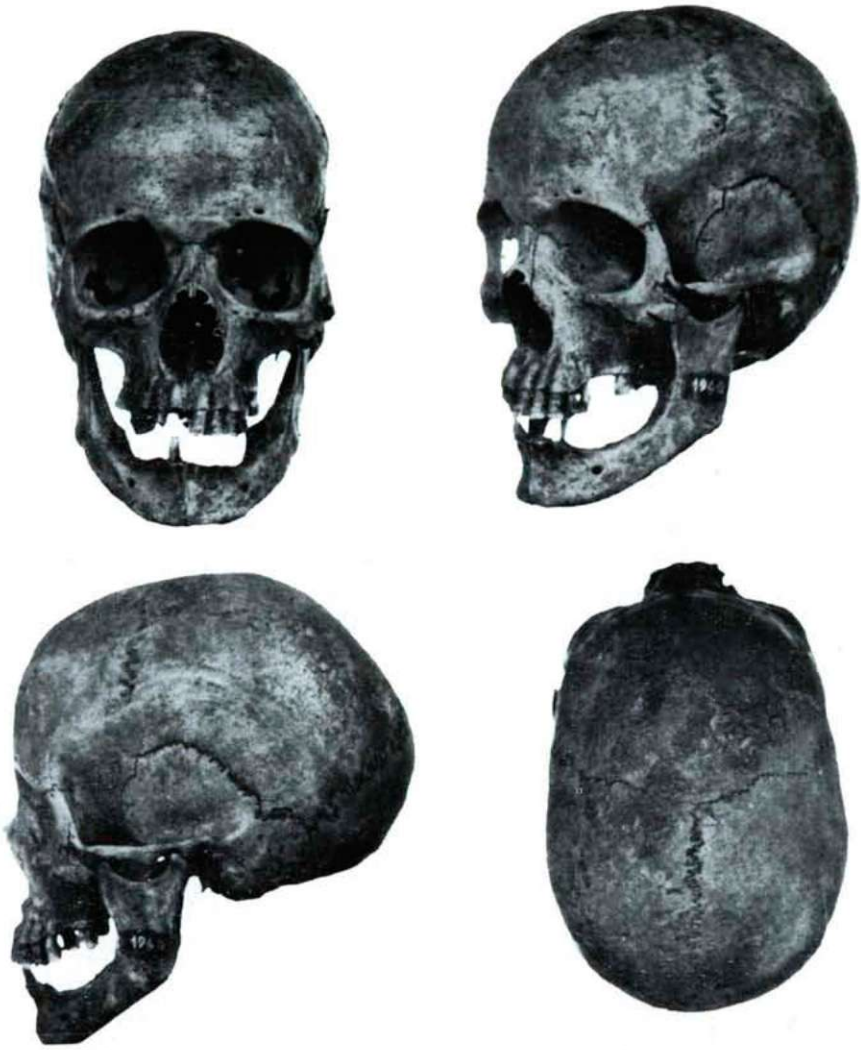

Plate 8. Szatymaz—Railway Station, 10—12th century. Grave 32., ♀ — am

dextrum (Fig. 6, Plate 9) *condylus quartus,* and *processus paramastoideus* l. s. has been observed only in one case (0,5 p. c.). From the morphologic variations, we have observed bathrocephaly in four skulls, plagiocephaly and klinocephaly in one case.

The variations occur at both sexes in about equal number of the observations (49 males and 50 females) and, as compared with them, the number of anatomic variations of infants and subadults is 50 per cent or so (24 cases).

We emphasize especially the infant skeletal remains of grave 149 where we noticed hare-lip (Fig. 8, Plate 9). In the upper-outerbrim of the orbit of the

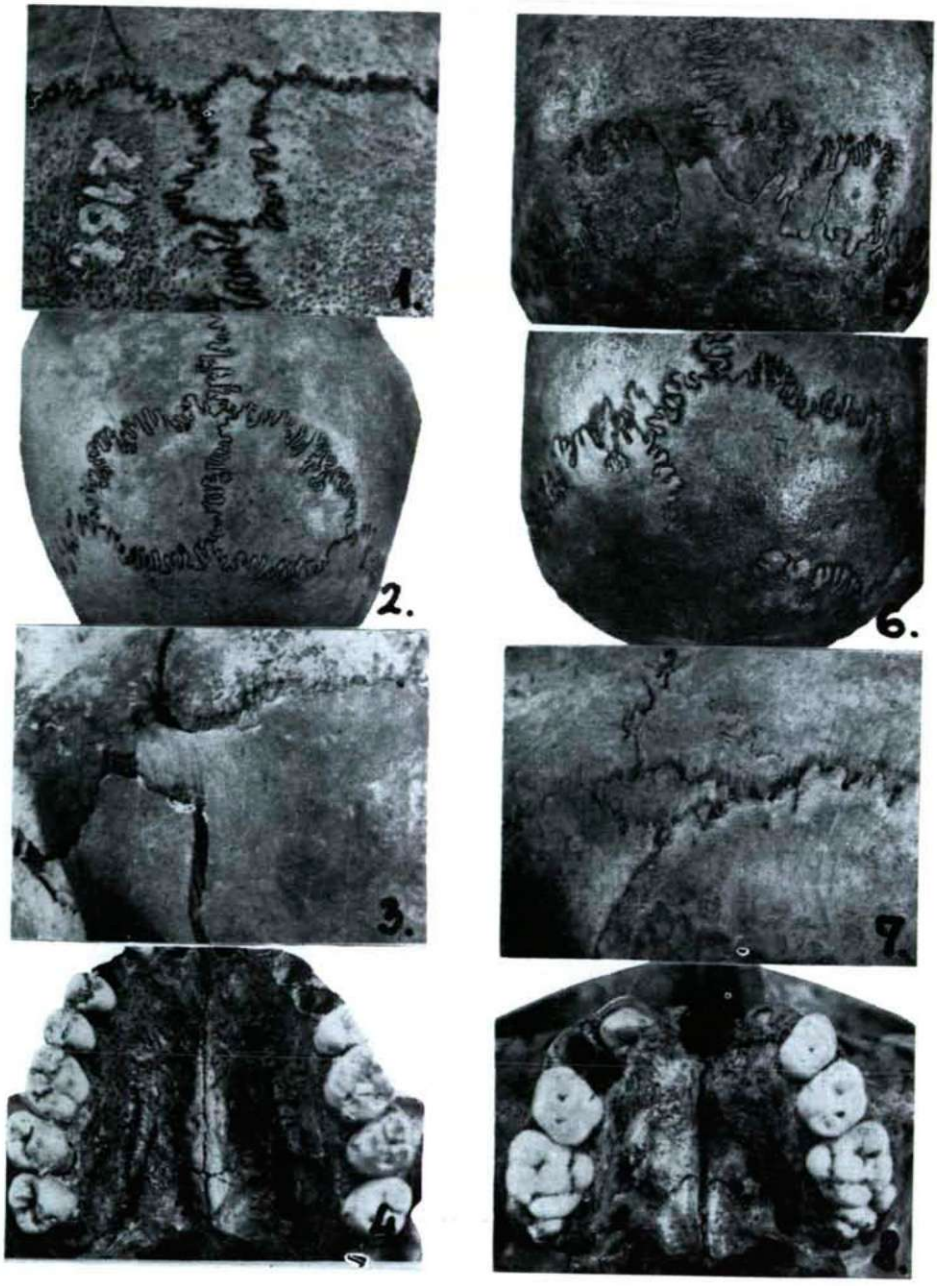

Plate 9. Szatymaz—Railway Station, 10—12th century. Anatomic variations and anomalies.

right side of a scattered skeletal find (grave 3) we have found the mark of a *callus* arising from a cut. Without observing the anatomic anomalies of long bones in detail, we only refer to the fact that in three cases (graves 101, 181, and fragment 55) on the bones of the upper limbs marks of a callus after fracture were found. We found also exostoses in several cases (grave 91, 127, 184 and fragment 7) and, in one case an anomalous and strong teeth wear too (grave 171).

Taxonomic analysis

The significance of taxonomic analysis was already repeatedly referred to by one of the authors of this paper (LIPTÁK, 1962, 1963, 1965), therefore we do not consider its motivation to be necessary. Our purpose is mainly to make possible, relying upon this, a comparison of our investigated material with the other series, from more and more points of view. The result of taxonomic analysis is contained in Table 7 where the racial components follow one another in the order of LIPTÁK's (1966) systematization.

(1) **Cromagnoid group.** This taxonomic group holds the third place in our research-material, regarding the ratio of its occurrence. In most of the cases the Cromagnoid-A (crA) group is more important (Plate 1), similar in its morphologic characteristics, to the Cro-Magnon race in the Upper Paleolithic. The Cromagnoid-B (crB) race, or – with an expression being of current use earlier – the East-Baltic (more correctly, East-Europoid) race is to be diagnosticated to a much smaller extent. Leaving a more exhaustive characterization of these races (subraces) out of consideration, we refer only to the above mentioned paper (LIPTÁK, 1966).

(2) **The Nordoid group** is much more considerable, it comprises more than 30 per cent of the whole population. The archaic Protonordic (pn) race with protomorphic features, a rugged skull relief (Plate 2), is not considerable; (on the basis of skeletal remains) the tall, narrow-faced, long-headed anthropological component (Plate 3, 4), the Nordic (n) race, is all the more important, without knowing, of course, its colour complexion.

(3) **The Mediterranean group** is the most important in the population investiagted by us. Especially highly characteristic is (Plate 5, 6) the more than 25 per cent participation of the gracile Mediterraneans (m) in the population. The tall Mediterraneans, in lack of a better nomenclature, may be called Atlantomediterraneans (am) – on morphologic basis – can be separated from the Nordics, being in several respects similar to them (Plate 7, 8). They differ from the Nordics, first of all by their cranial vault which is at least as long as theirs but at the same time narrower, and thus also the cranial index is low. The extremely leptoprosopic face is likewise characteristic for them. Also a complexion of characters reminding more or less definitely of the Iranian (i) race of Eastern origin could be ascertained. The Mediterraneans form together 37 per cent of the whole population.

(4) The **group of Brachycephals** follows the mentioned three groups in ratio; within the group the Pamirian (p) or Pamiro-Ferghanian, *resp.* according to Oshanin, the „Middle-Asiatic interfluvial type" is more considerable while the Alpine (a) race is represented in a somewhat smaller proportion. We think advisable to remark already here that the main racial components of the ceme-

tery in Orosháza-Rákóczitelep from the Arpadian age, examined by us in a similar way, are the same, with only a difference in percentage. In the Szatymaz population the Mediterraneans are the most considerable, in that of Rákóczitelep, however, the Nordoids. At the same time, in Szatymaz the Nordoids, while in Rákóczitelep the Mediterraneans take the second place. Cromagnoids follow — in an almost identical percentage — in both series in the third place while the Brachycephals in the fourth place, in Szatymaz with a little higher percentage.

(5) Next follow, with a low percentage, Europids of protomorphic character, without more particular taxonomic determination.

(6) In the sixth place partly determinable and partly indeterminable Europeo-Mongoloids come in a negligible but somewhat higher ratio than that of the former group. Again the situation is similar to the material in Orosháza-Rákóczitelep where even the order of importance of these accessory racial components is identical.

Comparison with other populations of Arpadian age

In any anthropological examination, the problem of homogeneity or heterogeneity of the population is an important question. Mainly the great series of Arpadian age are suitable for comparison; these are: Kérpuszta, published by LIPTÁK (1953), Orosháza-Rákóczitelep published by LIPTÁK and FARKAS (1962), and finally Szatymaz which is elaborated here. The simplest way of comparison is the taxonomic one. It is obvious, namely, that in case of Szatymaz the two main components (m, n) form about 70 p. c. of the whole population. This by all means indicates homogeneity. The same may be said about Orosháza-Rákóczitelep, as well, only the order of the two main anthropological components is reverse. In case of Kérpuszta, the 70 p. c. comes from three anthropologic components partly different from the former ones (m, crA, crB).

The variation of series may be also characterized in a quantitative way, by the *„mean sigma"* ratio introduced by HOWELLS (THOMA, 1957). Performing the calculation, it appears that, on the basis of *sigma* ratios (S. R.) calculated from the seven absolute dimensions playing role in our paper, Kérpuszta is the most heterogeneous (S. R. = 116,9), then follows Orosháza-Rákóczitelep (S.R. = 110,6) while at Szatymaz the calculated value is 97,1. Here, therefore, the variation is below the value given by HOWELLS,, showing the homogeneity of the population in Szatymaz in the Arpadian age. The same may be said about the indices; the values of *sigma ratio* are similar enough: Kérpuszta 117,9; Orosháza–Rákóczitelep 105,6, and Szatymaz 98,7. The statements about the *sigma* ratios concern, of course, only the males.

In Table 8 we have also included three lesser series into the comparison, apart from the three major series mentioned above. Observing the cranial index only, the complete identity of Szatymaz and Orosháza–Rákóczitelep is striking, as well as the difference of the former from Kérpuszta showing higher index values. The same goes for the percentage division of cranial indices, too, according to index groups, with the change that in case of Orosháza–Rákóczitelep the difference between the two sexes is

rather considerable. The latter two series, anyway, agree with each other, considering that first of all the dolicho- and mesocrany were characteristic for them while in the series from Kérpuszta only mesocrany excelled with its considerable percentage. Comparing the lesser series (where the mean is, anyhow, lower in value because of the smaller number of observations) in a similar way, it is obvious that on the basis of the cranial index some similarity appears in all the three small series from the Alföld (Lowlands); these are: Kiskunfélegyháza—Alpár highway (LIPTÁK, 1954), Csongrád—Felgyő (BARTUCZ—FARKAS, 1956), and Csátalja (LIPTÁK, 1958). Regarding the mean of the facial index of the major series, Orosháza—Rákóczitelep shows, as compared to Szatymaz, a lesser difference, viz., towards leptoprosopy. At the same time, the difference of Kérpuszta is more considerable towards euryprosopy but also the latter mean remains within the group of mesoprosopy.

Finally, if we perform a detailed taxonomic comparison as well, — taking into consideration the order of importance of the taxons — Szatymaz and Orosháza—Rákóczitelep approach each other while Kérpuszta differs more definitely from the former ones, first of all because the order of importance of the anthropological components is different. Comparing the lesser above series with the former major ones, we obtain the following results, emphasizing repeatedly that their value (may be except Csátalja) is only approximative because of the low number of observations. Csátalja seems to be very similar to Orosháza—Rákóczitelep, although this statement is not confirmed by the facial index values of Csátalja (very low number of observations!). The taxonomic analysis of Csongrád—Felgyő was carried out by BARTUCZ who pointed out a considerable Europeo—Mongoloid (Uralian and Turanid) racial element. This fact in itself distinguishes this series from the other ones. Valuing the data from Kiskunfélegyháza—Alpár highway, we must be careful because of the extremely low number of observations; anyway, it approaches best Orosháza—Rákóczitelep.

After all these we may decide on the anthropological aspect and place of the series from the centuries 10—12, unearthed near the railway station of Szatymaz in 1957, in a fairly complex way. And if we want to summarize the characteristic racial components of the Arpadian age, the Nordic—Mediterranean and euryprosopic tall Cromagnoid—A is the most characteristic component of Alföld (Lowlands). In Transdanubia (Pannonia), however, starting for the time being only from the already published data of Kérpuszta (with a high number of observations), the order and importance of the racial components are different.

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Table 1: Szatymaz—Railway Station, Arpadian Age
Skeletal Material

Characterization of the material		Inf. I.	Inf. II.	Juv.	Ad.	Mat.	Sen.	Age undeterminable	Total
Fragmentary (unmeasured or partly measured) crania	Males.....	—	—	—	—	—	—	2	2 (0,7%)
	Females	—	—	—	—	—	—	7	7 (2,4%)
	Undeterminable	9	12	3	—	1	1	21	47 (16,4%)
	Total:	9	12	3	—	1	1	30	56
Well preserved (measured) crania	Males	—	—	—	28	45	20	19	112 (39,2%)
	Females.....	—	—	—	33	24	7	18	82 (28,7%)
	Undeterminable	6	26	4	—	—	—	—	36 (12,6%)
	Total:	6	26	4	61	69	27	37	230
	Sum-total:	15 (5,2%)	38 (13,3%)	7 (2,4%)	61 (21,3%)	70 (24,8%)	28 (9,8%)	67 (23,4%)	286

Table 2: Distribution of the Measurements According to Hug's Categories

Measurements and categories		Males		Females	
1. Glabello-occipital length	short	*x*—179	15 (19,2%)	*x*—169	4 (8,1%)
	medium long	180—189	51 (65,4%)	170—179	31 (63,3%)
	long	190—*x*	12 (15,4%)	180—*x*	14 (28,6%)
8. Maximum breadth of cranium	narrow	*x*—139	38 (47,5%)	*x*—134	36 (69,2%)
	medium wide	140—149	40 (50,0%)	135—144	16 (30,8%)
	wide	150—*x*	2 (2,5%)	145—*x*	— —
9. Minimum frontal breadth	narrow	*x*— 96	33 (42,3%)	*x*— 92	15 (30,6%)
	medium wide	97—101	31 (39,7%)	93—97	22 (44,9%)
	wide	102—*x*	14 (18,0%)	98—*x*	12 (24,5%)
17. Basion-bregma height	low	*x*—129	14 (18,2%)	*x*—123	4 (8,0%)
	medium high	130—137	49 (63,6%)	124—131	37 (74,0%)
	high	138—*x*	14 (18,2%)	132—*x*	9 (18,0%)
45. Bizygomatic breadth	narrow	*x*—129	19 (30,7%)	*x*—121	15 (32,6%)
	medium wide	130—137	38 (61,3%)	122—129	27 (58,7%)
	wide	138—*x*	5 (8,0%)	130—*x*	4 (8,7%)
47. Total facial height	low	*x*—113	14 (30,4%)	*x*—105	9 (24,3%)
	medium high	114—121	21 (45,7%)	106—113	20 (54,1%)
	high	122—*x*	11 (23,9%)	114—*x*	8 (21,6%)
48. Upper facial height	low	*x*— 68	18 (25,7%)	*x*—64	13 (28,3%)
	medium high	69—73	30 (42,9%)	65—69	26 (56,5%)
	high	74—*x*	22 (31,4%)	70—*x*	7 (15,2%)

Table 3: Parameters of the Main Measurements and Indices. — Males

No. of measurements (Martin)	Measurements and indices	N	V	M ± m	s^2	s
1.	Glabello-occipital length	78	169—199	184,47 ± 0,62	30,77	5,54
1c.	Metopion-occipital length	77	174—197	183,48 ± 0,59	27,01	5,19
5.	Basion-nasion length	76	88—114	102,47 ± 0,53	21,35	4,62
8.	Maximum breadth of cranium	80	128—151	139,10 ± 0,55	24,91	4,99
9.	Minimum frontal breadth	78	89—106	97,50 ± 0,46	16,87	4,10
17.	Basion-bregma height	77	121—143	133,55 ± 0,48	18,38	4,28
20.	Porion-bregma height	76	102—121	113,11 ± 0,41	12,93	3,59
32/1—a.	Frontal angle	71	43°—54°	48,45° ± 0,33	8,14	2,85
38.	Cranial capacity	75	1163—1640	1419,83 ± 1,20	109,28	10,45
40.	Facial length	65	79—111	95,47 ± 0,74	35,73	5,97
45.	Bizygomatic breadth	62	112—143	131,22 ± 0,67	27,91	5,28
46.	Maxillar breadth	66	86—106	94,58 ± 0,49	16,03	4,00
47.	Total facial height	46	103—131	116,74 ± 0,96	42,87	6,54
48.	Upper facial height	70	61—82	71,28 ± 0,53	19,84	4,45
51,	Orbital breadth	71	35—43	38,55 ± 0,23	3,28	1,97
52.	Orbital height	69	28—40	32,99 ± 0,26	4,92	2,21
54.	Nasal breadth	65	21—30	25,26 ± 0,22	3,35	1,83
55.	Nasal height	74	45—61	51,45 ± 0,38	11,27	3,35
62.	Palatal length	70	39—53	45,85 ± 0,34	8,33	2,88
63.	Palatal breadth	71	31—48	38,72 ± 0,37	9,83	3,13
65.	Bicondylar-diameter	58	109—134	118,83 ± 0,75	33,12	5,75
66.	Bigonial-diameter	62	85—115	101,80 ± 0,60	22,68	4,76
69.	Mental height	62	22—41	32,41 ± 0,43	11,99	3,46
70.	Ramus height	60	53—75	65,75 ± 0,60	21,64	4,65
71.	Ramus breadth	62	24—38	31,20 ± 0,36	8,27	2,87
72.	Total facial angle	66	81°—93°	86,93° ± 0,38	9,91	3,14
8:1	Cranial index	77	68,5—87,0	75,44 ± 0,38	11,25	3,35
17:1	Length-height index	75	64,0—79,1	72,32 ± 0,32	7,95	2,81
17:8	Breadth-height index	77	87,5—103,9	96,07 ± 0,43	14,38	3,79
9:8	Transver. frotopar. index	76	59,7—78,2	70,14 ± 0,36	10,18	3,19
47:45	Facial index	41	77,0—98,5	88,96 ± 0,76	24,24	4,92
48:45	Upper facial index	61	47,3—65,2	54,32 ± 0,44	12,09	3,47
52:51	Orbital index	69	76,2—105,3	86,00 ± 0,73	37,29	6,10
54:55	Nasal index	63	40,4—58,3	49,36 ± 0,53	17,85	4,22
63:62	Palatal index	68	68,8—110,3	85,01 ± 1,04	74,25	8,61
	Calculated stature	75	145,9—177,1	165,71 ± 0,55	23,24	4,82

Table 4: Parameters of the Main Measurements and Indices. — Females

No. of measurements (Martin)	Measurements and indices	N	V	M ± m	s^2	s
1.	Glabello-occipital length	49	161—188	176,06 ± 0,77	29,18	5,40
1c.	Metopion-occipital length	51	166—188	176,67 ± 0,70	25,35	5,03
5.	Basin-nasion length	47	92—104	97,60 ± 0,47	10,97	3,28
8.	Maximum breadth of cranium	52	119—140	132,64 ± 0,62	20,47	4,52
9.	Minimum frontal breadth	49	87—102	94,56 ± 0,48	11,38	3,37
17.	Basion-bregma height	50	117—134	128,44 ± 0,49	12,41	3,52
20.	Porion-bregma height	49	101—116	108,42 ± 0,47	11,01	3,31
32/1—a.	Frontal angle	46	41—56	48,23 ± 0,41	7,83	2,79
38.	Cranial capacity	45	1100—1387	1249,94 ± 1,11	55,83	7,47
40.	Facial length	47	79—97	89,21 ± 0,61	17,82	4,22
45.	Bizygomatic breadth	46	109—136	123,68 ± 0,79	28,98	5,38
46.	Maxillar breadth	46	83—103	90,59 ± 0,60	16,65	4,08
47.	Total facial height	37	94—121	109,65 ± 0,99	36,29	6,02
48.	Upper facial height	46	56—75	66,19 ± 0,59	16,51	4,06
51.	Orbital breadth	45	35—41	38,04 ± 0,18	1,54	1,24
52.	Orbital height	46	28—37	32,77 ± 0,30	4,32	2,07
54.	Nasal breadth	45	21—28	24,24 ± 0,27	3,32	1,82
55.	Nasal height	45	33—54	48,28 ± 0,53	12,85	3,58
62.	Palatal length	43	38—48	42,48 ± 0,39	6,79	2,60
63.	Palatal breadth	47	31—43	37,06 ± 0,31	4,80	2,19
65.	Bicondylar-diameter	46	100—128	113,04 ± 1,03	49,18	7,01
66.	Bigonial-diameter	46	80—108	93,85 ± 0,87	35,02	5,91
69.	Mental height	48	24—34	29,50 ± 0,34	5,70	2,36
70.	Ramus height	46	52—67	60,26 ± 0,59	16,42	4,05
71.	Ramus breadth	47	26—36	29,94 ± 0,36	6,23	2,49
72.	Total facial angle	43	79°—95°	86,66° ± 0,50	11,14	3,33
8:1	Cranial index	47	69,6—85,7	75,46 ± 0,51	12,70	3,56
17:1	Length-height index	47	68,2—82,0	73,14 ± 0,36	6,13	2,47
17:8	Breadth-height index	48	90,5—105,0	96,88 ± 0,49	11,64	3,41
9:8	Transver. frontopar. index	46	64,6—77,3	71,34 ± 0,46	10,06	3,17
47:45	Facial index	34	76,4—101,8	88,98 ± 0,93	29,90	5,46
48:45	Upper facial index	43	43,8—58,9	53,54 ± 0,52	11,69	3,41
52:51	Orbital index	45	73,0—94,9	86,04 ± 0,78	28,08	5,29
54:55	Nasal index	44	40,7—75,8	50,71 ± 0,88	34,68	5,88
63:62	Palatal index	43	72,9—97,6	87,11 ± 0,91	35,86	5,98
	Calculated stature	67	145,4—169,3	155,32 ± 0,56	21,32	4,61

Table 5: Distribution of the Analyzed Material According to Categories

Characters				Males	Females	Total
8:1 Cranial index	Hyperdolichocranic		65,0—69,9	2 (2,6%)	1 (2,1%)	3 (2.4%)
	Dolichocranic		70,0—74,9	34 (44,2%)	18 (38,3%)	52 (41,9%)
	Mesocranic		75,0—79,9	35 (45,5%)	22 (48,9%)	58 (46,8%)
	Brachycranic		80,0—84,9	5 (6,5%)	4 (8,5%)	9 (7,3%)
	Hyperbrachycranic		85,0—89,9	1 (1,3%)	1 (2,1%)	2 (1,6%)
			Total:	77	47	124
17:1 Length-height index	Chamaecranic		*x*—69,9	11 (14,7%)	3 (6,4%)	14 (11,5%)
	Orthocranic		70,0—74,9	52 (69,3%)	39 (83,0%)	91 (74,6%)
	Hypsicranic		75,0—*x*	12 (16,0%)	5 (10,6%)	17 (13,9%)
			Total:	75	47	122
17:8 Breadth-height index	Tapeinocranic		*x*—91,2	13 (16,9%)	2 (4,2%)	15 (12,0%)
	Metriocranic		92,0—97,9	42 (54,5%)	31 (64,6%)	73 (58,4%)
	Acrocranic		98,0—*x*	22 (28,6%)	15 (31,2%)	37 (29,6%)
			Total:	77	48	125
9:8 Frontoparietal index	Stenometopic		*x*—65,9	8 (10,5%)	3 (6,5%)	11 (9,0%)
	Metriometopic		66,0—68,9	17 (22,4%)	10 (21,7%)	27 (22,1%)
	Eurymetopic		69,0—*x*	51 (67,1%)	33 (71,7%)	84 (68,9%)
			Total:	76	46	122
47:45 Facial index	Hypereuryprosopic		*x*—79,9	2 (4,9%)	1 (2,9%)	3 (4,0%)
	Euryprosopic		80,0—84,9	7 (17,1%)	9 (26,5%)	16 (21,3%)
	Mesoprosopic		85,0—89,9	14 (34,1%)	7 (20,6%)	21 (28,0%)
	Leptoprosopic		90,0—94,9	13 (31,7%)	14 (41,2%)	27 (36,0%)
	Hyperleptoprosopic		95,0—*x*	5 (12,2%)	3 (8,8%)	8 (10,7%)
			Total:	41	34	75
48:45 Upper facial index	Hypereuryene		*x*—44,9	— —	1 (2,3%)	1 (0,9%)
	Euryene		45,0—49,9	5 (8,2%)	5 (11,6%)	10 (9,6%)
	Mesene		50,0—54,9	34 (55,7%)	21 (48,8%)	55 (52,9%)
	Leptene		55,0—59,9	18 (29,5%)	16 (37,2%)	34 (32,7%)
	Hyperleptene		60,0—*x*	4 (6,6%)	— —	4 (3,9%)
			Total:	61	43	104
52:51 Orbital index	Chamaeconch		*x*—75,9	1 (1,4%)	1 (2,2%)	2 (1,8%)
	Mesoconch		76,0—84,9	30 (43,5%)	22 (48,9%)	52 (45,6%)
	Hypsiconch		85,0—*x*	38 (55,1%)	22 (48,9%)	60 (52,6%)
			Total:	69	45	114
54:55 Nasal index	Leptorrhine		*x*—46,9	20 (31,7%)	10 (22,7%)	30 (28,0%)
	Mesorrhine		47,0—50,9	22 (34,9%)	13 (29,6%)	35 (32,7%)
	Chamaerrhine		51,0—57,9	19 (30,2%)	19 (43,2%)	38 (35,5%)
	Hyperchamaerrhine		58,0—*x*	2 (3,2%)	2 (4,5%)	4 (3,7%)
			Total:	63	44	107
38. Cranial capacity		Males	Females			
	Oligencephalic	*x*—1300	*x*—1150	10 (13,3%)	5 (11,1%)	15 (12,5%)
	Euencephalic	1301—1450	1151—1300	35 (46,7%)	27 (60,0%)	62 (51,7%)
	Aristencephalic	1451—*x*	1301—*x*	30 (40,0%)	13 (28,9%)	43 (35,8%)
			Total	75	45	120
72. Total facial angle	Prognathous		70°0—79°9		1 (2,3%)	1 (0,9%)
	Mesognathous		80°0—84°9	17 (25,8%)	10 (23,3%)	27 (24,8%)
	Orthognathous		85°0—92°9	46 (69,7%)	31 (72,1%)	77 (70,6%)
	Hyperorthognathous		93°0—*x*	3 (4,5%)	1 (2,3%)	4 (3,7%)
			Total:	66	43	109
Calculated stature		Males	Females			
	Very short	130—149,9	121—139,9	1 (1,3%)	— —	1 (0,7%)
	Short	150—159,9	140—148,9	5 (6,7%)	4 (6,0%)	9 (6,3%)
	Short medium	160—163,9	149—152,9	16 (21,3%)	18 (26,9%)	34 (23,9%)
	Medium	164—166,9	153—155,9	23 (30,7%)	13 (19,4%)	36 (25,4%)
	Tall medium	167—169,9	156—158,9	18 (24,0%)	20 (29,8%)	38 (26,8%)
	Tall	170—179,9	159—167,9	12 (16,0%)	11 (16,4%)	23 (16,2%)
	Very tall	180—199,9	168—186,9	—	1 (1,5%)	1 (0,7%)
			Total:	75	67	142

Table 6: Distribution of the Main Morphological Characteristics.

Characteristics		Males		Females		Total	
		N	%	N	%	N	%
Vertical norm	Ovoid	21	25,9	16	31,4	37	28,0
	Pentagonoid	29	35,8	15	29,4	44	33,3
	Ellipsoid	13	16,0	8	15,7	21	15,9
	Sphenoid	13	16,0	9	17,6	22	16,7
	Sphaeroid	5	6,2	3	5,9	8	6,1
Glabella	Broca 1.	2	4,4	9	18,0	11	8,3
	Broca 2.	20	24,1	36	72,0	56	42,1
	Broca 3.	44	53,0	5	10,0	49	36,8
	Broca 4.	12	14,5	—	—	12	9,0
	Broca 5.	5	6,0	—	—	5	3,8
Fossa canina	1. Absent	10	12,8	11	21,6	21	16,3
	2. Slight	34	43,6	15	29,4	49	38,0
	3. Medium	21	26,9	13	25,5	34	26,4
	4. Deep	8	10,3	6	11,8	14	10,8
	5. Very deep	5	6,4	6	11,8	11	8,5
Prognathia alveolaris	1. Absent	29	39,2	12	23,5	41	32,8
	2. Moderate	28	37,8	24	47,1	52	41,6
	3. Pronounced	17	23,0	15	29,4	32	25,6

Table 7: Taxonomic Analysis.

Types (races)	Males	Females	Total
Cromagnoids:			
Cromagnoid-A (crA)	8 (11,3%)	6 (13,3%)	14 (12,1%)
Cromagnoid-B (crB)	2 (2,8%)	1 (2,2%)	3 (2,6%)
Nordoids:			
Protonordic (pn)	3 (4,2%)	— —	3 (2,6%)
Nordic (n)	24 (33,8%)	10 (22,2%)	34 (29,3%)
Mediterraneans:			
Gracile Medditerranean (m) ..	14 (19,7%)	17 (37,8%)	31 (26,7%)
Atlanto-Mediterranean (am) ..	6 (8,4%)	4 (8,9%)	10 (8,6%)
Iranian (i)	2 (2,8%)	— —	2 (1,7%)
Brachycephals:			
Alpine (a)	3 (4,2%)	2 (4,4%)	5 (4,3%)
Pamirian (p)	4 (5,6%)	4 (8,9%)	8 (6,9%)
Europids of protomorphic character:			
Protomorphic	1 (1,4%)	— —	1 (0,9%)
Chamaekranic europoid	1 (1,4%)	— —	1 (0,9%)
Europo-Mongoloids:			
Uralian (u)	1 (1,4%)	1 (2,2%)	2 (1,7%)
Turanid (t)	1 (1,4%)	— —	1 (0,9%)
Mongoloid	1 (1,4%)	— —	1 (0,9%)
Total:	71	45	116

Table 7/a: Orosháza — Rákóczi-telep.— Arpadian Age
Taxonomic analysis

Types (races)	Males	Females	Total
Nordoids:			
Nordic (n)	32 (43%)	20 (33%)	52 (38%)
Protonordic (pn)	3 (4%)	— —	3 (2%)
Mediterraneans:			
Gracile-Mediterranean (m)	17 (23%)	15 (25%)	32 (24%)
Atlanto-Mediterranean (am)	6 (8%)	— —	6 (4%)
Iranian (i)	2 (3%)	1 (1%)	3 (2%)
Cromagnoids:			
Cromagnoid-A (crA)	7 (9%)	7 (11%)	14 (10%)
Cromagnoid-B or East Baltic (crB)	2 (3%)	7 (11%)	9 (7%)
Brachycephals:			
Alpine, Pamirian, Dinaric			
(a, p, d)	3 (4%)	6 (10%)	9 (7%)
Mongoloids	1 (1%)	4 (7%)	5 (4%)
Protomorphic racial components	2 (3%)	1 (1%)	3 (2%)
Total:	75	61	136

Table 7/b. Békés—Povádzug. —Arpadian Age
Taxonomic analysis

Types (races)	Males	Females	Total
Nordoids:			
Protonordic (pn) and nordic (n)	10 (38,5%)	11 (35,5%)	21 (36,8%)
Mediterraneans:			
Gracile-Mediterranean (m)	5 (19,2%)	3 (9,7%)	8 (14,0%)
Atlanto-Mediterranean (am) and Protomediterranean (pm)	7 (27,0%)	7 (22,6%)	14 (24,6%)
Cromagnoids:			
Cromagnoid-A (crA)	2 (7,7%)	2 (6,5%)	4 (7,0%)
Cromagnoid-B, -C (crB, crC)	1 (3,9%)	2 (6,5%)	3 (5,3%)
Brachycephals;			
Undeterminated brachycephals (br) and Pamirian (p)	1 (3,9%)	3 (9,7%)	4 (7,0%)
Lappid (l)	— —	3 (9,7%)	3 (5,3%)
Total:	26	31	57

Table 8: Comparison of Some Series of the Arpadian Age

Provenience and date of excavation	Century	Author, date of publication	Mean of cranial index		
			Sex	N	M
Kiskunfélegyháza—Alpár highway, 1951	12—13th century	Lipták, 1954	♂ ♀	12 17	74,6 76,9
Csongrád—Felgyő, 1942—43	11—14th century	Bartucz—Farkas, 1956	♂ ♀	17 16	77,2 76,0
Csátalja, 1951—1953	11th century	Lipták, 1958	♂ ♀	18 32	76,5 76,7
Kérpuszta, 1949—1951	11th century	Lipták' 1953	♂ ♀	83 74	78,0 78,3
Orosháza—Rákóczi-telep 1951—1952	10—12th century	Lipták—Farkas 1962	♂ ♀	81 69	74,3 75,8
Szatymaz—Railway Station 1957	10—12th century	—	♂ ♀	77 47	75,4 75,5

Distribution of cranial index (p. c.)				Mean of facial index			Taxons (races)
x-74,9	75-79,9	80-84,9	85-x	Sex	N	M	
59 35	33 47	8 18	— —	♂ ♀	7 11	86,3 84,8	Nordic, Cromagnoid-A, Mediterranean, Cromagnoid-B
24 31	53 63	24 6	— —	♂ ♀	12 8	88,9 87,6	Europeo-Mongoloid (Uralian, Turanid), Brachycephal element (Pamirian), Cromagnoid-B (East-Europoid)
28 34	50 47	22 19	— —	♂ ♀	8 13	85,8 89,7	Nordic, Mediterranean, Cromagnoid-A, Cromagnoid-B, Brachycephal element
23 26	52 47	20 22	5 5	♂ ♀	62 50	87,7 86,1	Mediterranean, Brachycephal element, Cromagnoid-B, Nordic
60 37	31 41	5 22	3 —	♂ ♀	30 25	91,2 89,5	Nordic, Mediterranean, Cromagnoid-A, Cromagnoid-B, Brachycephal element
47 40	46 49	6 8	1 2	♂ ♀	41 34	89,0 89,0	Mediterranean, Nordic, Cromagnoid-A, Brachycephal element

Table 9: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	Measurements and indices	1910 2. (Juv)-Ad.	1911 3. Mat.	1912 4. Sen.
1.	Glabello-occipital length	186	182	187
1c.	Metopion-occipital length	185	176	180
5.	Basion-nasion length	102	105	109
8.	Maximum breadth of cranium	137	142	136
9.	Minimum frontal breadth	92	94	98
17.	Basion-bregma height	135	134	138
20.	Porion-bregma height	114	110	117
32/1—a.	Frontal angle	49°	49°	46°
38.	Calculated cranial capacity	1416	1405	1387
40.	Superior facial length	97	103	—
45.	Bizygomatic breadth	130	135	—
46.	Maxillar breadth	88	95	—
47.	Total facial height	118	104	—
48.	Upper facial height	71	66	—
51.	Orbital breadth	37	38	37
52.	Orbital height	32	31	34
54.	Nasal breadth	23	24	—
55.	Nasal height	50	45	54
62.	Palatal length	47	49	44
63.	Palatal breadth	37	(37)	—
65.	Bicondylar-diameter	119	120	—
66.	Bigonial-diameter	103	109	—
69.	Mental height	35	33	—
70.	Ramus height	64	71	—
71.	Ramus breadht	33	38	—
72.	Total facial angle	84°	81°	—
8:1	Cranial index	73,66	78,02	72,73
17:1	Length-height index	72,58	73,63	73,90
17:8	Breadth-height index	98,54	94,37	101,47
9:8	Transvers. frontopar. index	67,15	66,20	72,06
47:45	Facial index	90,77	77,04	—
48:45	Upper facial index	54,62	48,89	—
52:51	Orbital index	86,49	81,58	91,89
54:55	Nasal index	46,00	53,33	—
63:62	Palatal index	78,72	(75,51)	—
	Vertical norm	Ov.	Sphaer.	Ov.
	Glabella	2	3	4
	Protuberantia occipitalis externa	1	1	2
	Fossa canina	3	2	1
	Spina nasalis anterior	5	4	—
	Prognathia alveolaris	2	2	—
	Calculated stature	164,7	163,8	—
	Taxon	m—n	crA	n

Measurements, Indices and Morphologic Characters. — Males (1)

1913 5. Ad.	1915 7. Mat.	1917 9. (Juv)-Ad.	1921 13. Mat.	1923 15. Mat.	1929 21. Mat.	1930 22. Sen.
—	180	188	185	181	197	187
—	179	184	188	186	190	187
—	104	110	101	101	98	99
—	133	139	151	140	144	146
104	98	97	99	105	99	104
—	132	143	134	134	126	132
—	110	116	115	114	111	113
—	45°	51°	47°	47°	46°	46°
—	1294	1500	1600	1444	1444	1522
—	95	101	91	92	87	91
—	140	122	137	139	130	137
94	97	87	96	94	92	97
—	123	115	124	111	118	121
71	76	68	74	71	71	75
40	42	37	40	40	38	39
32	37	33	—	33	31	35
26	26	24	—	27	24	30
50	53	51	52	52	52	57
48	46	47	45	46	41	46
37	42	38	41	39	37	43
—	134	112	124	126	112	124
—	108	96	105	111	98	103
—	33	34	37	29	32	28
—	71	63	67	61	66	63
—	33	32	27	29	30	31
—	85°	88°	89°	86°	—	91°
—	73,89	73,94	81,62	77,35	73,10	78,07
—	73,33	76,06	72,43	74,03	63,96	70,59
—	99,25	102,88	88,74	95,71	87,50	90,41
—	73,68	69,78	65,56	75,00	68,75	71,23
—	87,86	94,26	90,51	79,86	90,77	88,32
—	54,28	55,74	54,01	51,07	54,62	54,74
80,00	88,10	89,19	—	82,50	81,58	89,74
52,00	49,06	47,06	—	51,92	46,15	52,63
77,08	91,30	80,85	91,11	84,78	90,24	93,48
—	Ell.	Ov.	Pent.	Ell.	Pent.	Sphaer.
3	3	2	2	3	4	3
—	1	0	1	1	1	2
1	3	2	3	3	4	2
3	3	3	2	5	2	3
1	2	3	1	2	1	1
—	175,4	—	165,8	145,9	156,1	168,3
—	n—x	n—x	p	crA—l	m—x	n

Table 9: Szatymaz—Railway Station. 10—12th. Century. —

No. of measurements (Martin	1936 28. Mat.	1938 30. Mat.	1941/a 34. Sen.	1945 38. Ad.	1953 46. Mat.
1.	184	183	179	188	188
1c.	186	179	181	186	186
5.	99	102	101	108	105
8.	147	139	141	145	139
9.	98	97	96	96	100
17.	134	143	138	140	141
20.	112	117	114	120	115
32/1—a.	51°	49°	48°	52°	49°
38.	1541	1453	1476	1547	1500
40.	98	87	90	106	—
45.	—	133	125	(132)	132
46.	95	93	90	—	—
47.	115	126	105	114	—
48.	70	75	72	68	75
51.	—	37	38	—	—
52.	—	31	33	—	—
54.	—	25	24	25	—
55.	47	51	53	47	—
62.	47	45	43	(46)	—
63.	36	37	38	36	—
65.	118	124	113	121	119
66.	106	107	104	102	104
69.	37	41	22	32	33
70.	67	73	67	72	66
71.	33	28	29	34	27
72.	83°	91°	89°	82°	87°
8:1	79,89	75,96	78,77	77,13	73,94
17:1	77,83	78,14	77,09	74,47	75,00
17:8	91,16	102,88	97,87	96,55	101,44
9:8	66,67	69,78	68,09	66,21	71,94
47:45	—	94,74	84,00	86,36	—
48:45	—	56,39	57,60	(51,52)	56,82
52:51	—	83,78	86,84	—	—
54:55	—	49,02	45,28	—	—
63:62	76,60	88,22	88,37	78,26	—
Vertical norm	Sphen.	Ell.	Ov.	Pent.	Ell.
Glabella	2	4	3	4	3
Prot. occ. ext.	2	1	1	1	1
Fossa canina	1	3	2	1	3
Spina nas. ant.	3	2	3	—	4
Progn. alv.	1	1	1	3	2
Calcul. stature	168,3	166,0	166,3	165,3	167,3
Taxon	p	n	n—m	n—x	n

Measurements, Indices and Morphologic Characters. — Males (2)

1955 48. Sen.	1956 49. Mat.	1965 58. Mat.	1967 60. Mat.	1968 61. Sen.	1979 72. Ad.	1983 76. Mat.	1985 78. Mat.
186	187	185	187	189	184	172	190
183	184	181	182	186	187	174	182
107	108	107	101	102	—	98	110
138	149	141	128	142	133	141	140
99	89	97	89	96	90	101	98
138	139	138	133	137	—	134	135
112	121	119	109	115	—	113	115
46°	54°	51°	44°	47°	—	49°	48°
1434	1590	1444	1285	1491	—	1379	1416
—	99	102	89	89	—	85	101
—	132	137	131	128	(112)	137	134
—	100	94	94	90	90	96	99
—	114	—	116	—	—	126	127
—	67	72	71	72	73	75	79
41	38	39	37	40	36	39	39
33	30	35	33	33	32	40	38
—	28	27	25	24	23	25	25
53	48	52	54	51	52	57	57
42	—	49	44	42	42	47	50
—	45	38	38	41	35	34	38
119	119	—	126	—	112	124	125
104	100	—	97	—	101	101	102
33	34	—	33	—	29	34	35
66	67	—	67	—	68	71	68
27	33	—	34	—	29	29	32
—	86°	87°	89°	90°	—	88°	87°
74,19	79,68	76,22	68,45	75,13	72,28	81,98	73,68
74,19	74,33	74,59	71,12	72,49	—	77,91	71,05
100,00	93,29	97,87	103,91	96,48	—	95,04	96,43
71,74	59,73	68,79	69,53	67,61	67,67	71,63	70,00
—	86,36	—	88,55	—	—	91,97	94,78
—	50,76	52,55	54,20	56,25	65,18	54,74	58,96
80,49	78,95	89,74	89,19	82,50	88,89	102,56	97,44
—	58,33	51,92	46,30	47,06	44,23	43,86	43,86
—	—	77,55	86,36	97,62	83,33	91,89	76,00
Ov.	Pent.	Sphen.	Ov.	Sphen.	Ov.	Sphaer.	Ov.
4	4	5	3	2	2	2	4
2	1	1	1	1	0	0	1
2	3	5	2	4	2	5	2
—	3	5	3	2	3	3	3
—	3	3	3	1	2	1	2
177,1 n(?)	— p—crA(?)	— pn	175,1 am	172,1 n—moid	172,1 d—m	163,0 p—x	163,3 pn—x

Table 9: Szatymaz—Railway Station. 10—12th Century. —

No. of. Measurements (Martin)	1991 82—85. Sen.	1993 86. Mat.	1995 87. Mat.	2002 94—98. Sen.	2005 94—98. Mat.
1.	192	—	173	177	183
1c.	193	—	176	180	187
5.	106	101	97	101	99
8.	142	—	137	143	140
9.	104	—	95	98	101
17.	139	—	134	140	135
20.	115	—	107	121	117
32/1—a.	47°	—	48°	53°	51°
38.	1576	—	1361	1503	1464
40.	96	104	90	93	88
45.	136	130	126	130	130
46.	99	94	86	89	96
47.	—	128	108	—	—
48.	80	79	62	73	72
51.	42	41	37	40	38
52.	33	33	31	33	31
54.	28	24	23	25	—
55.	55	54	47	55	53
62.	48	—	44	46	40
63.	38	40	35	39	41
65.	—	—	—	—	—
66.	—	(100)	90	—	—
69.	—	40	29	—	—
70.	—	—	—	—	—
71.	—	—	28	—	—
72.	90°	82°	83°	86°	93°
8:1	73,96	—	79,19	80,79	76,50
17:1	72,40	—	77,46	79,10	73,77
17:8	97,89	—	97,81	97,90	96,43
9:8	73,24	—	69,34	68,53	72,14
47:45	—	98,46	85,71	—	—
48:45	58,82	60,77	49,21	56,15	55,38
52:51	78,57	80,49	83,78	82,50	81,58
54:55	50,91	44,44	48,94	45,45	—
63:62	79,17	—	79,55	84,78	102,50
Vertical norm	Ell.	—	Pent.	Ov.	Pent.
Glabella	3	—	3	1	2
Prot. occ. ext.	3	1	0	1	0
Fossa canina	2	1	2	4	2
Spina nas. ant.	3	—	3	2	1
Progn. alv.	1	2	3	2	2
Calcul. stature	—	—	166,3	—	—
Taxon	n	—	m	a—x	moid(s)-eur

Measurements, Indices and Morphologic Characters. — Males (3)

2007 94—98. Sen.	2009 94—98. Mat.	2010 94—98. Mat.	2011 99. Sen.	2020 107. Ad.	2022 109. (Mat.)— Sen.	2027 114. Mat.	2028 115. Mat.
176	183	184	182	171	177	177	183
175	179	187	185	174	179	178	180
96	96	106	99	93	94	102	101
136	135	140	146	130	143	139	134
98	98	100	92	97	95	100	93
134	136	135	129	126	133	128	124
116	112	113	118	113	110	111	109
—	49°	50°	51°	51°	43°	44°	48°
1304	1350	1464	1476	1171	1432	1344	1240
—	101	93	87	90	86	93	95
—	122	128	129	121	132	129	128
—	90	95	93	90	90	95	95
—	—	—	—	108	110	126	—
—	74	72	61	63	68	75	69
—	40	37	38	37	37	40	35
—	33	32	32	32	36	34	29
—	26	25	27	24	23	23	25
—	55	53	48	48	52	50	53
—	50	46	41	42	44	45	47
—	39	38	(43)	41	35	38	40
—	—	—	120	111	121	122	—
100	—	—	93	97	96	101	—
32	—	—	37	31	25	34	—
59	—	—	58	68	64	75	—
32	—	—	24	31	29	33	—
—	83°	89°	90°	84°	83°	90°	87°
77,27	73,77	76,09	80,22	76,02	80,79	78,53	73,22
76,14	74,32	73,37	70,88	73,68	75,14	72,32	67,76
98,53	100,74	96,43	88,36	96,92	93,01	92,81	92,54
72,06	72,59	71,43	63,61	74,62	66,43	71,94	69,40
—	—	—	—	89,26	83,33	97,67	—
—	60,66	56,25	(47,29)	52,07	51,52	58,14	53,91
—	82,50	86,49	84,21	86,49	97,30	85,00	82,86
—	47,27	47,17	56,25	50,00	44,23	46,00	47,17
—	78,00	82,61	(104,88)	97,62	79,55	84,44	85,11
Ov.	Ell.	Ell.	Pent.	Ov.	Pent.	Sphen.	Ov.
2	3	3	3	2	1	2	3
0	1	1	0	1	0	0	1
—	2	3	5	4	1	3	1
—	3	3	3	4	1	4	3
—	2	2	1	2	1	1	1
—	—	—	160,5	166,4	163,3	165,0	157,8
—	i—x	m—am	crB—x	m	crB—x	n—m	m

Table 9: Szatymaz—Railway Station. 10—12th Century. —

No. of. measurements (Martin)	2030 117. Mat.	2031 118. Mat.	2037 124. Ad.	2041 128. Ad.	2043 130. Mat.
1.	169	185	180	183	176
1c.	175	187	179	182	176
5.	88	99	102	92	104
8.	147	141	138	144	133
9.	95	102	97	104	104
17.	129	135	137	130	130
20.	114	119	116	112	111
32/1—a.	52°	50°	47°	—	50°
38.	1427	1472	1387	1440	1249
40.	79	98	94	—	101
45.	122	137	133	—	133
46.	89	99	102	—	98
47.	112	122	131	—	110
48.	66	75	82	—	68
51.	36	39	38	—	39
52.	32	35	40	—	34
54.	22	25	—	—	27
55.	48	54	61	—	49
62.	39	47	46	—	47
63.	32	37	39	—	35
65.	113	116	112	—	111
66.	85	103	98	—	92
69.	29	28	37	—	31
70.	60	61	68	—	59
71.	27	34	36	—	30
72.	91°	85°	90°	—	87°
8:1	86,98	76,22	76,67	78,69	75,57
17:1	76,33	72,97	76,11	71,04	73,86
17:8	87,76	95,74	99,28	90,28	97,74
9:8	64,63	72,34	70,29	72,22	78,20
47:45	91,80	89,05	98,50	—	82,71
48:45	54,10	54,74	61,65	—	51,13
52:51	88,89	89,74	105,26	—	87,18
54:55	45,83	46,30	—	—	55,10
63:62	82,05	78,72	84,78	—	74,47
Vertical norm	Pent	Ov.	Pent.	Sphaer.	Sphen.
Glabella	2	3	2	3	3
Prot. occ. ext.	0	2	2	1	0
Fossa canina	4	2	1	—	4
Spina nas. ant.	3	2	3	—	—
Progn. alv.	1	2	1	—	2
Calcul. stature	—	159,7	165,8	—	161,1
Taxon	a	n—x	n—x	—	m—crB

Measurements, Indices and Morphologic Characters. — Males (4)

2049 136. Mat.	2051 138. Mat.	2054 141. Ad.	2056 143. Mat.	2059 146. Ad.	2060 147. Ad.	2066 153. Ad.	2067 154. Mat.
182	190	188	184	188	187	188	178
177	190	192	181	185	184	192	180
—	100	105	104	102	105	100	102
140	148	137	143	137	141	150	132
94	94	103	99	99	97	97	96
—	135	134	136	128	130	135	128
—	112	111	112	110	114	112	110
—	44°	47°	51°	47°	—	50°	50°
—	1600	1472	1476	1350	1397	1640	1258
—	93	99	97	98	—	93	99
—	131	131	133	131	—	—	129
—	91	94	98	93	—	93	95
—	119	113	121	109	—	—	115
—	75	71	73	74	—	75	67
—	38	38	38	39	—	36	37
—	35	33	33	37	—	35	32
—	26	25	28	27	—	24	23
—	52	51	51	54	—	55	48
—	46	48	46	47	—	47	49
33	33	39	39	39	—	37	39
109	119	111	122	118	—	—	116
100	99	108	107	105	—	—	96
33	33	32	33	29	—	—	35
53	64	70	65	62	—	—	72
27	31	29	32	28	—	—	33
—	84°	86°	85°	86°	—	87°	83°
76,92	77,89	72,87	77,72	72,87	75,40	79,79	74,16
—	71,05	71,28	73,91	67,55	69,52	71,81	71,91
—	91,22	97,81	95,10	93,43	92,20	90,00	96,97
67,14	63,51	75,18	69,23	72,26	68,79	64,67	72,73
—	90,84	86,26	90,98	83,21	—	—	89,15
—	57,25	54,20	54,89	56,49	—	—	51,94
—	92,11	86,84	86,84	94,87	—	97,22	86,49
—	50,00	49,02	54,90	50,00	—	43,64	47,92
—	71,74	81,25	84,78	82,98	—	78,72	79,59
Pent.	Pent.	Sphen.	Pent.	Ov.	Ov.	Ell.	Pent.
3	3	3	3	3	3	2	3
1	1	1	1	0	1	1	0
2	3	3	2	3	—	3	1
3	2	5	3	3	—	3	4
1	3	2	2	2	—	2	3
176,2	166,8	167,4	164,2	168,6	—	—	163,7
—	n	n	m—x	chamae-eur	—	a—x	am

Table 9: Szatymaz—Railway Station 10—12th Century. —

No. of measurements (Martin)	2070 157. Mat.	2076 163. Mat.	2079 166. Ad.	2081 168—169. Mat.—Sen.	2096 181. Ad.
1.	189	188	184	190	185
1c.	187	182	182	189	182
5.	104	109	100	110	107
8.	133	136	134	144	142
9.	96	96	92	106	96
17.	130	134	132	135	130
20.	107	112	110	115	110
32/1—a.	43°	46°	49°	48°	46°
38.	1350	1369	1331	1550	1387
40.	98	96	94	—	107
45.	128	132	129	—	133
46.	93	92	95	—	100
47.	123	120	117	—	112
48.	76	78	72	—	69
51.	36	41	36	—	39
52.	36	37	32	—	30
54.	23	24	22	—	28
55.	57	55	51	—	54
62.	(48)	47	49	—	51
63.	33	37	38	—	43
65.	118	110	115	—	123
66.	103	110	95	—	103
69.	34	32	32	—	32
70.	70	71	67	—	63
71.	33	29	30	—	30
72.	83°	90°	84°	—	82°
8:1	70,37	72,34	72,83	75,79	76,76
17:1	68,78	71,28	71,74	71,05	70,27
17:8	97,74	98,53	98,51	93,75	91,55
9:8	72,18	70,59	68,66	73,61	67,61
47:45	96,09	90,91	90,70	—	84,21
48:45	59,38	59,09	55,81	—	51,88
52:51	100,00	90,24	88,89	—	76,92
54:55	40,35	43,64	43,14	—	51,85
63:62	68,75	78,72	77,55	—	84,31
Vertical norm	Ell.	Ell.	Ov.	Sphen.	Pent.
Glabella	2	3	2	3	3
Prot. occ. ext.	1	2	2	2	1
Fossa canina	2	3	2	—	2
Spina nas. ant.	2	4	3	—	3
Progn. alv.	3	3	3	—	3
Calcul. stature	168,4	166,3	168,2	—	164,2
Taxon	am	i—x	m	—	crA—m

Measurements, Indices and Morphologic Characters. — Males (5)

2105 190. Mat.	2109 Scatt. 2. Mat.	2110 Scatt. 3. Juv.—Ad.	2111 Scatt. 4. Ad.	2113 Scatt. 6. Ad.	2115 Scatt. 8. Ad.	2116 Scatt. 9. Ad.	2117 Scatt. 10. Mat.
186	199	188	190	188	192	—	179
186	197	189	188	190	189	—	174
100	111	102	107	106	114	—	101
142	142	135	142	137	130	137	140
103	103	101	105	96	—	—	92
136	138	134	136	131	133	130	129
117	116	113	115	—	111	108	108
53°	46°	44°	50°	52°	—	—	48°
1481	1605	1425	1500	1425	1369	—	1326
92	105	97	97	96	—	—	(96)
—	137	131	139	126	—	—	139
—	99	98	100	96	—	—	106
(120)	—	118	122	113	—	—	117
74	72	74	69	63	—	—	(70)
37	43	39	39	38	—	—	39
33	33	35	33	—	—	—	32
—	25	27	29	—	—	—	25
57	47	54	50	51	—	—	51
—	49	46	43	(39)	—	—	47
—	41	37	43	43	—	—	43
—	—	118	123	114	124	114	122
93	—	103	110	103	105	100	107
29	—	34	37	31	33	29	32
75	—	63	67	60	63	62	70
33	—	37	33	28	31	33	31
90°	87°	84°	93°	90°	—	—	—
76,34	71,36	71,81	74,74	72,87	67,71	—	78,21
73,12	69,35	71,28	71,58	69,68	69,27	—	72,07
95,77	97,18	99,26	95,77	95,62	102,31	94,89	92,14
72,54	72,54	74,81	73,94	70,07	—	—	65,71
—	—	90,08	87,77	89,68	—	—	84,17
—	52,55	56,49	49,64	50,79	—	—	50,35
89,19	76,74	89,74	84,62	—	—	—	82,05
—	53,19	50,00	58,00	—	—	—	49,02
—	83,67	80,43	100,00	110,26	—	—	91,49
Ell.	Pent.	Pent.	Sphen.	Sphen.	Pent.	Sphen.	Ov.
2	3	2	3	3	2	—	3
2	3	0	1	1	1	1	2
2	3	1	4	5	—	—	2
2	3	2	1	3	—	—	2
1	2	2	2	2	—	—	—
165,3	—	—	—	—	160,3	164,9	168,3
—	n	am—x	crA—x	m—x	m	—	crA

Table 9: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	2121 Scatt. 14. Sen.	2122 Scatt. 15. Sen.	2123 Scatt. 16. Mat.	2124 Scatt. 17. Mat.	2125 Scatt. 18. Juv.—Ad.
1.	186	185	—	—	191
1c.	183	184	—	—	186
5.	102	104	—	—	106
8.	141	137	—	141	143
9.	102	103	—	94	99
17.	133	125	—	—	134
20.	115	108	—	—	116
32/1—a.	49°	45°	—	48°	53°
38.	1416	1313	—	—	1472
40.	94	98	—	—	111
45.	130	143	—	—	137
46.	99	98	—	103	101
47.	—	—	—	—	—
48.	65	71	—	81	70
51.	39	42	—	41	37
52.	33	32	—	36	30
54.	26	28	25	25	26
55.	45	51	45	57	47
62.	43	48	47	47	53
63.	43	45	38	48	40
65.	—	—	—	—	—
66.	—	—	—	—	—
69.	—	—	—	—	—
70.	—	—	—	—	—
71.	—	—	—	—	—
72.	90°	88°	—	91°	81°
8:1	75,81	74,05	—	—	74,87
17:1	71,51	67,57	—	—	69,63
17:8	94,33	91,24	—	—	93,71
9:8	72,34	75,18	—	66,67	69,23
47:45	—	—	—	—	—
48:45	50,00	49,65	—	—	51,09
52:51	84,62	76,19	—	87,80	81,08
54:55	57,78	54,90	55,56	43,86	55,32
63:62	100,00	93,75	80,85	102,13	75,47
Vertical norm	Pent.	Ell.	Sphaer.	Pent.	Ov.
Glabella	4	3	3	4	3
Prot. occ. ext.	2	—	—	1	1
Fossa canina	3	2	3	2	2
Spina nas. ant.	4	2	—	1	2
Progn. alv.	1	1	1	3	3
Calcul. stature	—	—	165,0	—	—
Taxon	crA—x	crA	—	t—p	protomorf

Measurements, Indices and MorphologicCharacters. — Males (6)

2131 Scatt. 24. Ad.	2132 Scatt. 25. Mat.	2136 Scatt. 29. Mat.	2139 Scatt. 31. Mat.—Sen.	2140 Scatt. 32. Mat.	2149 Scatt. 41. Mat.	2152 Scatt. 44. Ad.	2153 Scatt. 45. Sen.
—	179	178	188	190	180	182	193
—	182	174	184	190	181	181	186
—	102	103	98	105	100	98	105
—	141	135	133	143	143	131	141
90	98	96	94	100	100	94	92
—	140	129	135	139	131	128	136
—	118	110	108	118	111	113	115
43°	—	47°	47°	54°	50°	—	51°
—	1503	1240	1369	1557	1432	1258	1472
—	—	103	92	105	95	—	—
—	—	135	131	134	131	129	—
95	—	94	92	93	89	—	—
—	—	—	—	119	120	—	—
73	—	72	68	71	69	—	—
36	—	39	37	38	37	—	39
31	—	33	29	30	33	—	32
27	—	26	26	24	26	—	—
54	—	52	49	47	50	—	—
46	—	42	44	48	46	—	—
40	—	37	40	42	38	—	—
—	122	—	117	124	117	—	—
—	97	—	101	115	102	—	—
—	30	—	30	38	33	—	—
—	69	66	64	68	62	—	—
—	35	29	33	33	34	—	—
85°	—	90°	84°	85°	87°	—	—
—	78,77	75,84	70,74	75,26	79,44	71,98	73,06
—	78,21	72,47	71,81	73,16	72,78	70,33	70,47
—	99,29	95,56	101,50	97,20	91,61	97,71	96,45
—	69,50	71,11	70,68	69,93	69,93	71,76	65,25
—	—	—	—	88,81	91,60	—	—
—	—	53,33	51,91	52,99	52,67	—	—
86,11	—	84,62	78,38	78,95	89,19	—	82,05
50,00	—	50,00	53,06	51,06	52,00	—	—
86,96	—	88,10	90,91	87,50	82,61	—	—
Ov.	Pent.	Sphen.	Pent.	Pent.	Sphen.	Pent.	Pent.
4	3	3	4	5	3	3	4
—	2	1	1	3	0	1	1
2	—	3	2	5	2	—	2
3	—	3	2	3	5	—	—
1	—	1	2	1	2	—	—
—	162,7	—	—	165,6	164,1	—	—
am(?)	—	u—x	m	pn	n—br	—	n—x

Table 9: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	2161 Scatt. 53. Mat.	2167 Scatt. 57. Ad.	2473 Scatt. 2. Ad.
1.	186	178	182
1c.	183	178	175
5.	103	105	99
8.	137	128	133
9.	96	91	92
17.	132	129	121
20.	110	108	102
32/1—a.	54°	51°	46°
38.	1369	1214	1163
40.	99	98	92
45.	—	125	—
46.	—	94	90
47.	116	103	111
48.	67	64	64
51.	36	36	39
52.	29	28	32
54.	—	21	23
55.	48	46	49
62.	—	45	46
63.	—	31	38
65.	118	112	118
66.	96	97	96
69.	33	28	38
70.	66	60	61
71.	33	32	32
72.	86°	91°	87°
8:1	73,66	71,91	73,08
17:1	70,97	72,47	66,48
17:8	96,35	100,78	90,98
9:8	70,07	71,09	69,17
47:45	—	82,40	—
48:45	—	51,20	—
52:51	80,56	77,78	82,05
54:55	—	45,65	46,94
63:62	—	68,89	84,61
Vertical norm.	Pent.	Ov.	Pent.
Glabella	5	3	5
Prot. occ. ext.	1	0	0
Fossa canina	2	2	2
Spina nas. ant.	3	4	4
Progn. alv.	2	1	3
Calcul. stature	162,7	—	—
Taxon	n	m—x	m—x

Measrements, Indicens and Morphologic Characters. — Males (7)

2478 Scatt. 7. Mat.	2482 Scatt. 11. Mat.—Sen.	2483 Scatt. 12. Mat.	2484 Scatt. 13. Sen.	2486 Scatt. 15. Sen.	2488 Scatt. 17. Mat.
188	186	183	195	—	183
186	189	184	193	—	189
108	100	102	105	—	104
133	140	134	138	—	134
—	96	93	101	—	100
133	133	134	137	—	134
111	113	117	115	—	115
48°	51°	51°	46°	—	44°
1369	1464	1369	1518	—	1416
100	88	100	92	—	91
—	133	125	133	—	132
—	92	94	98	—	94
116	—	—	—	—	114
70	70	66	76	—	69
41	39	40	40	43	39
33	33	33	35	33	36
27	26	26	25	26	28
49	53	48	52	51	55
48	41	48	50	49	42
40	40	38	40	38	40
130	—	—	—	—	124
105	—	—	—	—	108
31	—	—	—	—	29
71	—	—	—	—	71
33	—	—	—	—	36
89°	93°	87°	92°	—	91°
70,37	75,27	73,22	70,77	—	73,22
70,37	71,51	73,22	70,26	—	73,22
100,00	95,00	100,00	99,28	—	100,00
—	68,57	69,40	73,19	—	74,63
—	—	—	—	—	86,36
—	52,63	52,80	57,14	—	52,27
80,49	84,62	82,50	87,50	76,74	92,31
55,10	49,06	54,17	48,08	50,98	50,91
83,33	97,56	79,17	80,00	77,55	95,24
Ov.	Pent.	Pent.	Sphen.	—	Ell.
3	3	2	3	5	3
2	2	0	1	—	2
4	3	3	2	2	3
3	5	3	—	2	4
2	3	3	1	2	1
—	—	—	—	—	—
n	crA—n	m—n	n	—	n—x

Table 10: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	Measurements and indices	1909 1. Mat.	1914 6. Ad.
1.	Glabello-occipital length	188	181
1c.	Metopion-occipital length	188	180
5.	Basion-nasion length	102	96
8.	Maximum breadth of cranium	134	129
9.	Minimum frontal breadth	94	93
17.	Basion-bregma height	129	124
20.	Porion-bregma height	111	109
32/1—a.	Frontal angle	41°	46°
38.	Calculated cranial capacity	1359	1196
40.	Superior facial lenght	94	—
45.	Bizygomatic breadth	130	114
46.	Maxillar breadht	88	87
47.	Total facial height	115	116
48.	Upper facial height	65	—
51.	Orbital breadth	38	38
52.	Orbital height	34	32
54.	Nasal breadth	24	—
55.	Nasal height	53	—
62.	Palatal length	44	—
63.	Palatal breadth	33	39
65.	Bicondylar-diameter	120	110
66.	Bigonial-diameter	97	88
69.	Mental height	31	32
70.	Ramus height	58	66
71.	Ramus breadth	30	30
72.	Total facial angle	84°	—
8:1	Cranial index	71,28	71,27
17:1	Length-height index	68,62	68,51
17:8	Breadth-height index	96,27	96,12
9:8	Transvers. frontopar. index	70,15	72,09
47:45	Facial index	88,46	101,75
48:45	Upper facial index	50,00	—
52:51	Orbital index	89,47	84,21
54:55	Nasal index	45,28	—
63:62	Palatal index	75,00	—
Vertical norm		Ov.	Sphen.
Glabella		2	2
Protuberantia occipitalis externa		1	0
Fossa canina		3	2
Spina nasalis anterior		2	—
Prognathia alveolaris		2	—
Calculated stature		152,0	156,8
Taxon		m(am)	am

Measurements, Indices and Morphologic Characters. — Females (1)

1924 16. Ad.	1925 17. Ad.	1932 24. Juv.—Ad.	1937 29. Mat.	1940 32. Juv.—Ad.	1943 36. Mat.	1946 39. Ad.
168	176	(171)	166	175	181	178
171	178	170	167	178	183	183
98	94	—	96	94	104	96
134	129	128	134	129	130	130
92	95	—	87	95	95	89
124	129	—	127	128	129	133
103	110	108	108	110	109	113
46°	54°	—	48°	49°	50°	51°
1207	1222	—	1199	1214	1276	1313
81	91	—	87	88	97	88
120	123	—	129	119	121	124
93	89	—	97	88	91	90
111	94	—	—	110	102	102
65	57	—	66	65	62	61
—	39	—	38	39	37	35
33	31	—	32	33	32	28
—	26	—	26	26	24	21
49	42	—	50	49	46	45
41	42	(39)	42	41	42	38
37	37	(31)	38	35	39	36
106	109	102	115	109	110	113
84	91	82	97	96	95	96
29	25	28	—	30	28	27
54	60	60	60	56	59	58
28	32	26	28	27	28	30
—	81°	—	88°	87°	88°	91°
79,76	73,30	(74,85)	80,72	73,71	71,82	73,03
73,81	73,30	—	76,51	73,14	71,27	74,72
92,54	100,00	—	94,78	99,22	99,23	102,31
68,66	73,64	—	64,93	73,64	73,08	68,46
92,50	76,42	—	—	92,44	84,30	82,26
54,17	46,34	—	51,16	54,62	51,24	49,19
—	79,49	—	84,21	84,62	86,49	80,00
—	61,90	—	52,00	53,06	52,17	46,67
90,24	88,10	(79,49)	90,48	85,37	92,86	94,74
Ov.	Ov.	Ov.	Sphaer.	Ell.	Ov.	Pent.
1	2	—	2	1	2	2
0	0	0	1	0	0	0
2	2	2	4	5	2	4
—	2	3	4	2	3	2
2	3	3	1	3	3	1
152,4 a—m	152,3 crA—m	147,0 —	152,7 p—x	160,3 am	153,5 m(am)	152,2 m—crA

Table 10: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	1947 40. Ad.	1949 42. Ad.	1950 43. Mat.	1951 44. Ad.	1954 47. Ad.
1.	178	179	166	176	184
1c.	178	181	169	176	185
5.	99	93	95	96	101
8.	136	127	140	130	137
9.	98	90	97	95	94
17.	130	132	130	124	131
20.	107	104	111	—	112
32/1—a.	47°	45°	47°	47°	47°
38.	1294	1171	1321	1171	1378
40.	97	84	82	94	93
45.	122	(112)	126	—	126
46.	91	89	90	89	88
47.	110	111	116	109	106
48.	69	66	65	67	64
51.	37	37	38	38	37
52.	34	32	34	32	33
54.	21	25	24	24	23
55.	48	49	48	45	47
62.	45	41	38	43	43
63.	36	37	36	38	37
65.	111	108	118	100	115
66.	91	98	98	95	95
69.	31	28	32	31	29
70.	65	54	57	59	63
71.	34	26	33	30	32
72.	79°	86°	92°	80°	87°
8:1	76,40	70,95	84,34	73,86	74,46
17:1	73,03	68,16	78,31	70,45	71,20
17:8	95,59	96,06	92,86	95,38	95,62
9:8	72,06	70,87	69,29	73,08	68,61
47:45	90,16	(99,11)	92,06	—	84,13
48:45	56,56	(58,93)	51,59	—	50,79
52:51	91,89	86,49	89,47	84,21	89,19
54:55	43,75	51,02	50,00	53,33	48,94
63:62	80,00	90,24	94,74	88,37	86,05
Vertical norm	Pent.	Ov.	Romb.	Pent.	Pent.
Glabella	2	2	2	2	3
Prot. occ. ext.	0	0	0	1	0
Fossa canina	2	1	5	2	3
Spina nas. ant.	2	3	3	2	5
Progn. alv.	2	2	2	3	3
Calcul. stature	159,3	150,7	151,3	148,3	—
Taxon	m	m	a	m—x	am—crA

Measurements, Indices and Morphologic Characters. — Females (2)

1958 51. Ad.	1972 65. Mat.	1980 73. Ad.	1982 75. Mat.	1984 77. Mat.	1989 82—85. Ad.	1990 82—85. Ad.	2014 101. Ad.
171	173	172	173	176	178	175	174
171	175	173	172	179	182	176	174
94	98	95	96	94	102	93	98
139	138	137	133	132	132	134	131
94	95	91	100	91	102	93	96
131	129	124	122	126	131	128	133
111	108	101	106	108	111	107	109
48°	44°	43°	47°	48°	51°	48°	46°
1308	1317	1248	1147	1231	1304	1240	1240
84	84	88	88	92	92	86	94
121	129	124	125	122	128	120	128
89	98	89	88	88	91	92	95
113	118	112	104	109	103	—	112
71	72	68	62	68	60	66	67
39	40	36	39	37	39	37	38
36	35	34	31	35	35	35	35
21	28	22	25	22	25	24	24
50	51	52	47	51	47	48	49
31	39	43	43	46	41	42	43
37	37	35	36	35	37	37	39
108	121	110	120	113	110	—	120
98	89	100	86	88	84	—	108
32	32	29	24	30	29	—	33
61	66	65	58	64	63	—	63
27	33	33	29	31	28	—	31
88°	88°	83°	89°	83°	90°	85°	80°
81,29	79,77	79,65	76,88	75,00	74,16	76,57	75,29
76,61	74,57	72,09	70,52	71,59	73,60	73,15	76,44
94,24	93,48	90,51	92,48	95,45	99,24	95,52	101,53
67,63	68,84	66,42	75,19	68,94	77,27	69,40	73,28
93,39	91,47	90,32	83,20	89,34	80,47	—	87,50
58,68	55,81	54,84	49,60	55,74	46,88	55,00	52,34
92,31	87,50	94,44	79,49	94,59	89,74	94,59	92,11
42,00	54,90	42,31	53,19	43,14	53,19	50,00	48,98
90,24	94,87	81,40	83,72	76,09	90,24	88,10	90,70
Romb.	Pent.	Romb.	Pent.	Pent.	Ov.	Pent.	Ov.
1	2	2	3	2	1	2	2
0	0	1	0	0	0	0	0
1	1	5	3	3	2	2	3
2	1	5	2	2	5	2	2
2	2	2	2	1	1	2	2
152,1 p	159,4 p—m	156,1 p—m	152,7 m—crA	157,9 n	— crA—m	— m	156,6 crA—n

Table 10: Szatymaz—Railway Station. 10—12th Century. — Measurements, Indices and Morphologic Characters. — Females (3)

No. of measurements (Martin)	2017 104. Mat.	2021 108. Mat.—Sen.	2032 119. Mat.	2033 120. Mat.	2034 121. Sen.	2044 131. Mat.—Sen.	2057 144. Mat.	2058 145. Mat.
1.	180	180	179	180	—	—	172	178
1c.	181	178	181	176	177	180	172	179
5.	98	101	100	100	—	—	94	98
8.	—	136	128	136	132	137	132	134
9.	92	100	98	96	—	90	93	95
17.	134	133	130	126	129	130	127	125
20.	112	112	108	111	113	113	107	107
32/1—a.	49°	50°	47°	49°	—	—	50°	45°
38.	—	1322	1249	1240	—	—	1179	1240
40.	83	91	94	95	—	—	90	93
45.	(128)	136	123	125	—	—	114	120
46.	93	103	86	86	—	—	87	96
47.	—	121	108	113	—	—	105	112
48.	69	74	68	71	—	—	61	67
51.	38	40	40	39	—	—	37	39
52.	32	37	34	33	—	—	28	35
54.	23	24	23	25	—	—	22	23
55.	49	54	48	50	—	—	44	48
62.	40	48	41	47	—	—	39	—
63.	38	43	36	37	42	—	37	—
65.	—	125	113	116	128	—	105	111
66.	—	100	100	88	102	—	80	86
69.	28	29	27	32	27	—	28	25
70.	—	64	62	59	—	—	52	65
71.	—	30	29	31	26	—	32	30
72.	95°	90°	84°	89°	—	—	86°	86°
8:1	—	75,56	71,51	75,56	—	—	76,74	75,28
17:1	74,44	73,89	72,63	70,00	—	—	73,84	70,22
17:8	—	97,79	101,56	92,65	97,73	94,89	96,21	93,28
9:8	—	73,53	76,56	70,59	—	65,69	70,45	70,90
47:45	—	88,97	87,80	90,40	—	—	92,11	93,33
48:45	(53,91)	54,41	55,28	56,80	—	—	53,51	55,83
52:51	84,21	92,50	85,00	84,62	—	—	72,97	89,74
54:55	46,94	44,44	47,92	50,00	—	—	50,00	47,92
63:62	95,00	89,58	87,80	78,72	—	—	94,87	—
Vertical norm	—	Pent.	Ell.	Pent.	Pent.	Pent.	Pent.	Pent.
Glabella	2	1	2	3	—	—	2	2
Prot. occ. ext.	5	0	1	1	0	1	0	0
Fossa canina	4	4	2	3	3	—	4	—
Spina nas. ant.	2	3	2	3	—	—	4	3
Progn. alv.	1	2	2	2	2	—	3	1
Calcul. stature	162,5	157,2	165,7	158,2	169,3	160,8	145,5	155,6
Taxon	—	m—x	n—am	n	—	—	m	—

2082 168—169. Mat.—Sen.	2084 171. Mat.—Sen.	2085 172. Ad.	2093 179/a Mat.	2095 180. Mat.	2097 182. Ad.	2101 186/a Mat.— Sen.	2106 191. Mat.	2112 Scatt. 5. Ad.	2118 Scatt. 11. Ad.— Mat.	2119 Scatt. 12. Juv.— Ad.	2142 Scatt. 34. Ad.
177	182	—	176	180	181	180	183	—	175	188	174
178	181	—	178	175	179	180	180	—	175	187	177
101	101	—	92	102	102	—	104	—	95	102	99
138	138	129	124	128	131	139	131	—	137	132	—
91	97	—	95	93	98	98	98	92	94	98	92
130	132	117	127	131	134	—	133	—	130	132	130
112	110	101	107	109	107	—	110	—	110	109	—
50°	46°	—	49°	47°	48°	—	51°	—	48°	45°	55°
1352	1359	—	1163	1205	1294	—	1294	—	1317	1359	—
93	91	85	92	88	94	—	97	—	84	94	93
121	133	122	127	128	127	—	129	(117)	124	124	—
89	87	85	95	90	96	—	94	86	87	94	—
—	117	—	111	—	118	—	106	—	—	119	98
66	75	—	68	68	74	—	63	66	63	70	62
38	40	—	38	39	39	—	37	37	38	31	37
32	33	—	33	37	33	—	30	30	34	34	31
25	25	—	25	22	25	—	23	25	24	21	25
33	53	—	50	49	51	—	46	49	47	48	45
—	43	42	46	43	46	—	47	40	38	45	—
—	36	37	38	39	37	—	39	37	32	37	—
—	125	114	117	—	110	—	116	—	—	111	—
—	98	90	100	—	97	—	96	—	—	94	—
—	34	29	33	—	32	—	31	—	—	33	27
—	60	54	64	—	67	—	58	—	—	63	62
—	28	27	33	—	34	—	32	—	—	32	32
90°	88°	—	84°	89°	86°	—	86°	—	90°	85°	86°
77,97	75,82	—	70,45	71,11	72,38	77,22	71,58	—	78,29	90,20	—
73,45	72,53	—	72,73	72,78	74,03	—	72,68	—	74,29	70,21	74,71
94,20	95,65	90,70	102,42	102,34	102,29	—	101,53	—	94,89	100,00	—
65,94	68,12	—	76,61	72,66	74,81	70,50	74,81	—	68,61	74,24	—
—	87,97	—	87,40	—	92,91	—	82,17	—	—	95,97	—
54,55	56,39	—	53,54	53,13	58,27	—	48,84	56,41	50,81	56,45	—
84,21	82,50	—	86,84	94,87	84,62	—	81,08	81,08	89,47	82,93	83,78
75,76	47,17	—	50,00	56,41	49,02	—	50,00	51,02	51,06	43,75	55,56
—	83,72	88,10	82,61	90,70	80,43	—	82,98	92,50	84,21	82,22	—
Romb.	Pent.	—	Ell.	Ov.	Ell.	Romb.	Ov.	—	Romb.	Ov.	Ov.
2	1	—	2	2	2	3	3	2	2	2	2
1	0	—	0	1	0	1	0	—	0	0	0
1	1	1	1	5	2	—	3	2	5	3	2
3	1	2	3	4	2	—	2	1	2	3	2
1	1	1	3	2	3	—	2	2	2	1	3
—	164,1	151,9	160,1	—	156,7	—	158,2	156,2	—	—	154,3
n—x	n	—	n	n	n	—	crA—m	—	m—crA	am	m

Table 10: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	2148 Scatt 40. Ad.	2151 Scatt 43. Mat.	2154 Scatt 46. Mat.
1.	177	175	173
1c.	178	173	173
5.	100	99	98
8.	134	134	131
9.	99	96	98
17.	131	128	127
20.	107	110	106
32/1—a.	50°	50°	50°
38.	1285	1214	1179
40.	91	93	91
45.	130	125	129
46.	94	91	93
47.	107	—	109
48.	67	68	66
51.	39	38	38
52.	31	35	31
54.	26	22	28
55.	50	54	51
62.	42	43	44
63.	35	38	31
65.	121	—	123
66.	103	—	95
69.	29	—	30
70.	57	—	62
71.	36	—	29
72.	90°	89°	87°
8:1	75,71	76,57	75,72
17:1	74,01	73,14	73,41
17:8	97,76	95,52	96,95
9:8	73,88	71,64	74,81
47:45	82,31	—	84,50
48:45	51,54	54,40	51,16
52:51	79,49	92,11	81,58
54:55	52,00	40,74	54,90
63:62	83,33	88,37	93,18
Vertical norm	Ov.	Ov.	Ov.
Glabella	2	2	2
Prot. occ. ext.	1	1	0
Fossa canina	1	2	3
Spina nas. ant.	3	1	—
Progn. alv.	2	2	1
Calcul. stature	—	—	—
Taxon	crA	n	m—crA

Measurements, Indices and Morphologic Characters. — Females (*4*)

2159 Scatt 51. Mat.	2164 Scatt 55. Ad.	2474 Scatt 3. Mat.	2475 Scatt 4. Ad.	2480 Scatt 9. Ad.	2481 Scatt 10. Ad.	2485 Scatt 14. Ad.
171	171	174	161	172	174	184
171	169	178	166	171	174	184
93	99	100	92	95	97	95
127	119	135	138	131	133	140
88	91	98	92	96	93	—
127	125	129	132	123	129	130
108	104	107	113	104	109	116
47°	49°	50°	56°	49°	48°	—
1131	1100	1276	1295	1131	1222	1387
92	95	92	85	87	88	—
—	109	124	128	118	121	—
—	83	92	96	—	93	—
111	101	105	—	110	113	—
69	63	68	56	66	69	—
38	39	36	38	—	36	—
31	31	31	30	—	34	—
26	25	28	24	—	26	—
50	47	51	43	—	51	—
48	42	43	41	—	42	—
35	36	38	40	—	39	—
105	105	117	—	103	108	—
—	90	94	—	91	93	—
21	26	25	—	29	28	—
—	52	54	—	64	61	—
—	27	28	—	28	27	—
83°	88°	87°	86°	—	89°	—
74,27	69,59	77,59	85,71	76,16	76,44	76,09
74,27	73,10	74,14	81,99	71,51	74,14	70,65
100,00	105,04	95,56	95,65	93,89	96,99	92,86
69,29	76,47	72,59	66,67	73,28	69,92	—
—	92,66	84,68	—	93,22	93,39	—
—	57,80	54,84	43,75	55,93	57,02	—
81,58	79,49	86,91	78,95	—	94,44	—
52,00	53,19	54,90	55,81	—	50,98	—
72,92	85,71	88,37	97,56	—	92,86	—
Pent.	Ell.	Romb.	Sphaer.	Ov.	Ell.	Ov.
2	1	2	2	1	1	2
0	0	0	0	0	1	1
1	1	1	3	2	4	—
2	3	—	2	—	1	—
3	2	1	3	2	2	—
151,9 m	153,1 m	— crA—x	— crB—1	— m	— m	— —

Table 11: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	Measurements and indices	1916 8. Inf. II.	1928 20. Inf. I.
1.	Glabello-occipital length	169	143
1c.	Metopion-occipital length	175	147
5.	Basion-nasion length	—	—
8.	Maximum breadth of cranium	—	119
9.	Minimum frontal breadth	86	77
17.	Basion-bregma height.	—	—
20.	Porion-bregma height	109	94
32/1—a.	Frontal angle	50°	55°
40.	Superior facial length	—	—
45.	Bizygomatic breadth	100	(84)
46.	Maxillar breadth	76	63
47.	Total facial height	92	65
48.	Upper facial height	57	37
51.	Orbital breadth	34	—
52.	Orbital height	31	26
54.	Nasal breadth	23	19
55.	Nasal height	42	29
62.	Palatal length	34	23
63.	Palatal breadth	31	25
65.	Bicondylar-diameter	91	72
66.	Bigonial-diameter	77	60
69.	Mental height	24	20
70.	Ramus height	48	32
71.	Ramus breadth	26	20
72.	Total facial angle	85°	95°
8:1	Cranial index	—	83,2
17:1	Length-height index	—	—
17:8	Breadth-height index	—	—
9:8	Transvers. frontopar. index	—	64,7
47:45	Facial index	92,0	(77,4)
48:45	Upper facial index	57,0	(44,1)
52:51	Orbital index	91,2	—
54:55	Nasal index	54,8	65,5
63:62	Palatal index	91,2	108,7

Measurements and Indices. — Subadults and Infants (1)

1941 33. Inf. II.	1948 41. Juv.	1952 45. Inf. I–II.	1957 50. Inf. II.	1961 54. Inf. II.	1969 62. Inf. II.	1971 64. Inf. I.
177	188	167	172	180	166	160
183	194	171	—	183	168	172
84	102	86	90	105	—	78
130	138	125	133	129	123	137
90	98	82	91	91	81	89
125	130	114	115	133	—	118
111	113	103	104	111	97	108
48°	—	52°	45°	53°	46°	55°
75	—	82	88	96	—	69
104	—	93	108	107	91	(102)
77	—	73	80	84	69	74
88	—	84	—	93	—	86
54	—	53	62	58	—	49
35	—	33	35	37	33	37
33	—	30	33	30	31	38
21	—	22	21	24	—	18
38	—	37	43	43	—	35
32	—	35	38	40	—	30
30	—	32	29	36	—	28
90	—	87	—	101	90	88
73	—	68	—	85	71	—
—	—	23	—	26	22	24
46	—	38	—	55	40	41
26	—	26	—	26	25	24
91°	—	89°	89°	88°	—	98°
73,5	73,4	74,9	77,3	71,7	74,1	83,8
70,6	69,1	68,3	66,9	73,9	—	73,8
96,1	94,2	91,2	91,2	86,5	103,1	86,1
69,2	71,0	65,6	68,4	70,5	65,9	64,1
84,6	—	90,3	—	86,9	—	(84,3)
51,9	—	56,1	57,4	54,2	—	(48,0)
94,3	—	90,9	94,3	81,1	93,9	75,7
55,3	—	59,5	48,8	55,8	—	51,4
93,8	—	91,4	76,3	90,0	—	93,3

Table 11: Szatymaz—Railway Station. 10—12th Century. —

No. of measurements (Martin)	1973 66. Inf. II.	1975 68. Inf. II.	1976 69/a Inf. II.	1981 74. Inf. I.	2001 93. Inf. II.
1.	175	168	163	155	165
1c.	176	169	168	161	168
5.	94	85	—	78	93
8.	130	123	127	111	127
9.	94	87	83	77	88
17.	132	117	—	108	129
20.	108	103	107	99	107
32/1—a.	46°	49°	—	—	54°
40.	83	82	—	72	85
45.	116	110	(102)	(78)	(105)
46.	86	80	78	60	77
47.	110	100	—	—	92
48.	65	60	53	37	56
51.	36	35	37	28	35
52.	35	32	30	—	31
54.	20	19	22	—	23
55.	46	44	38	26	41
62.	38	37	32	28	33
63.	37	32	30	27	31
65.	102	94	—	—	97
66.	89	84	—	—	80
69.	32	27	—	—	25
70.	58	49	—	—	48
71.	30	28	—	—	26
72.	88°	87°	—	—	86°
8:1	74,3	73,2	75,6	71,6	74,7
17:1	75,4	69,6	—	69,7	78,2
17:8	101,5	95,1	—	97,3	101,6
9:8	72,3	70,7	65,4	69,4	69,3
47:45	94,8	90,9	—	—	(87,6)
48:45	56,0	54,6	(51,1)	(47,4)	53,3
52:51	97,2	91,4	81,1	—	88,6
54:55	43,5	43,2	57,9	—	56,1
63:62	97,4	86,5	93,8	96,4	93,9

Measurements and Indices. — Subadults and Infants (2)

2026 113/a Inf. I.	2029 116. Inf. II.	2035 122. Inf. I.	2052 139. Inf. II.	2055 142/b Inf. II.	2061 148. Inf. II.	2062 149. Inf. I–II.	2063 150. Inf. I.
157	173	167	174	158	177	177	164
161	180	169	178	159	181	178	169
—	—	—	90	—	92	94	—
118	133	—	128	—	128	129	132
75	89	—	87	92	94	94	83
—	—	—	119	—	127	129	—
—	—	95	101	—	108	106	—
—	56°	—	48°	51°	48°	50°	—
—	—	—	82	—	86	—	—
—	102	—	—	105	106	107	—
—	76	—	79	78	80	79	—
—	—	—	91	—	106	—	—
—	—	—	56	49	68	—	51
—	35	—	33	32	36	35	33
—	29	29	32	29	36	32	29
—	21	21	22	21	21	21	19
—	37	40	42	36	49	—	37
—	35	33	34	36	41	—	29
—	31	30	32	29	34	29	29
—	—	—	98	—	102	97	—
—	—	—	79	—	86	84	—
16	—	—	24	—	29	—	—
29	—	—	45	—	47	47	—
21	—	—	27	—	28	27	—
—	88°	—	86°	82°	85°	—	—
75,2	76,9	—	73,6	—	72,3	72.9	80,5
—	—	—	68,4	—	71,8	72,9	—
—	—	—	92,1	—	99,2	100,0	—
63,6	66,9	—	67,1	—	73,4	72,9	62,9
—	—	—	—	—	100,0	—	—
—	—	—	—	66,7	64,2	—	—
—	82,9	—	96,1	90,6	100,0	91,4	87,9
—	56,8	52,5	52,4	58,3	42,9	—	51,4
—	88,6	90,9	94,1	80,6	82,9	—	100,0

Table 11: Szatymaz—Railway Station. 10—12th Century. Measurements and Indices. — Subadults

No. of measurements (Martin)	2072 159. Inf. II.	2073 160. Juv.	2087 174. Inf. II.	2090 176. Inf. I.	2100 185. Inf. II.
1.	182	178	179	161	172
1c.	183	177	185	163	175
5.	97	100	95	—	89
8.	—	129	136	—	133
9.	87	94	97	78	87
17.	130	134	135	—	123
20.	113	111	115	—	105
32/1—a.	—	48°	50°	—	51°
40.	—	91	78	—	82
45.	—	112	117	—	104
46.	77	83	88	65	80
47.	—	102	105	—	95
48.	—	64	63	43	58
51.	—	36	37	29	35
52.	—	33	30	30	30
54.	19	23	23	17	21
55.	—	47	46	32	41
62.	33	42	34	24	38
63.	30	35	37	29	31
65.	94	108	110	—	95
66.	81	89	94	—	78
69.	23	29	29	—	27
70.	47	59	52	—	51
71.	26	27	27	—	28
72.	—	87°	94°	—	86°
8:1	—	72,5	75,1	—	77,3
17:1	71,4	75,3	75,4	—	71,5
17:8	—	103,9	99,3	—	92,5
9:8	—	73,4	71,3	—	65,4
47:45	—	91,1	89,8	—	91,4
48:45	—	57,1	53,9	—	55,8
52:51	—	91,7	81,1	103,5	85,7
54:55	—	48,1	50,0	53,1	51,2
63:62	52,5	83,3	108,9	120,9	81,6

and Infants (3)

2103 188. Inf. II.	2130 Scatt. 23. Inf. II.	2166 Scatt. 56. Inf. II.	2476 Scatt. 5. Juv.	2477 Scatt. 6. Inf. II.	2487 Scatt. 16. Inf. II.	2489 Scatt. 18. Inf. II.	2490 Scatt. 19. Inf. II.
167	175	165	173	176	172	175	169
170	181	167	176	183	176	180	174
—	90	—	—	84	92	—	—
137	134	127	132	132	131	134	121
90	90	87	93	87	95	87	84
—	121	—	—	128	126	—	—
103	109	96	—	113	110	—	—
—	54°	53°	—	56°	51°	—	50°
—	83	—	—	77	84	—	—
(100)	(100)	96	—	102	114	97	—
73	76	72	86	80	85	76	75
—	—	—	—	90	—	89	—
58	49	49	—	56	59	53	52
33	34	33	—	35	37	33	35
31	31	30	—	29	33	30	33
17	22	21	25	21	21	20	19
44	37	35	—	40	43	37	36
38	34	34	40	35	36	35	36
29	31	30	38	30	36	28	33
—	—	—	—	96	—	89	—
—	—	—	—	68	—	80	—
—	—	—	—	25	—	24	—
—	—	—	—	48	—	43	—
—	—	—	—	29	—	28	—
—	94°	87°	—	95°	92°	—	85°
82,0	76,6	76,1	76,3	75,0	76,2	76,6	71,6
—	69,1	—	—	72,7	73,3	—	—
—	90,3	—	—	96,1	96,2	—	—
65,7	67,2	68,5	70,5	65,9	72,5	64,9	69,4
—	—	—	—	88,2	—	91,8	—
58,0	49,0	51,0	—	54,9	51,8	54,6	—
93,9	91,2	90,1	—	82,9	89,2	90,9	94,3
38,6	59,5	60,0	—	52,5	48,8	54,1	52,8
90,6	91,2	88,2	95,0	85,7	100,0	80,0	91,7